BLM LIBRARY
88079110

Sadler Fire Entrapment Investigation

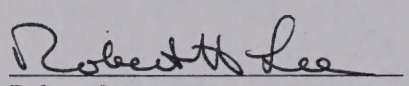
U. S. Department of the Interior
Bureau of Land Management

August 9, 1999

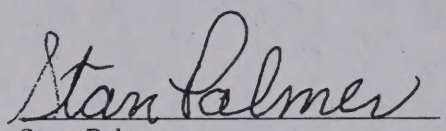
SD
421.32
.N3
S23
1999
c.2

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

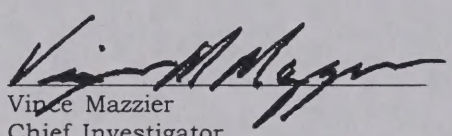
Sadler Fire Investigation Team



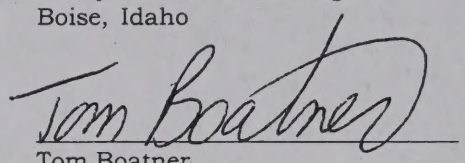
Robert Lee
Team Leader
Bureau of Land Management, New Mexico
State Fire Management Officer
Santa Fe, New Mexico



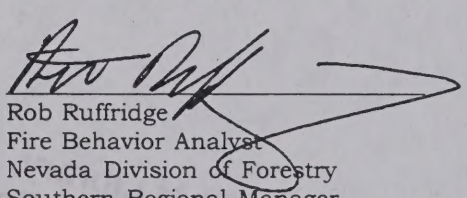
Stan Palmer
Safety Specialist
Bureau of Land Management,
National Interagency Fire Center
Safety and Health Manager
Boise, Idaho



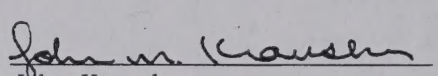
Vince Mazzier
Chief Investigator
Bureau of Land Management, Alaska Fire Service
Safety and Health Specialist
Ft. Wainwright, Alaska



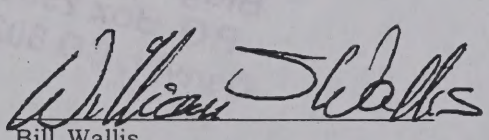
Tom Boatner
Operations Specialist
Bureau of Land Management, Montana
State Fire Management Officer
Billings, Montana



Rob Ruffridge
Fire Behavior Analyst
Nevada Division of Forestry
Southern Regional Manager
Las Vegas, Nevada



John Kraushaar
Park Service Representative
National Park Service, Pacific West Region
Deputy Regional Fire Management Officer
San Francisco, California



Bill Wallis
Fire Behavior Analyst
Bureau of Land Management, Colorado
State Fire Management Officer
Lakewood, Colorado

Table of Contents

Overview 5

Fire Behavior Summary 21

The Standards..... 27

Contributing Factors 33

Glossary 43

Appendix A-1

Incident Action Plan A-1

Division Q Unit Log A-22

The main Sadler fire approached the backfiring operation.

The entrapment site and firing squad's safety area.

#4447059 ID: 98079110 SD 421.32 .N3 S23 1999 c.2

Overview

Summary

On August 9, 1999, six firefighters from the Golden Gate 3 crew were entrapped by wildland fire as they conducted a backfiring operation on the Sadler Complex in Elko, Nevada. Three firefighters were hospitalized and treated for smoke inhalation and two of those were treated for first- and second-degree burns to the left side of their faces and necks. The other three were treated for smoke inhalation and released from the hospital.

This complex of fires was under the jurisdiction of the Elko Field Office, Bureau of Land Management (BLM). The Nevada State Office, BLM, initiated a Serious Accident Investigation on August 10, 1999. The investigation team collected information and analyzed data using established wildland fire management guidance. The facts surrounding the entrapment are included in this report.

Conduct of Investigation

In early August 1999, the BLM's Nevada State Office requested the assistance of a Fire and Aviation Safety Team when several wildland fires were burning in the northern portion of the state. Led by Tom Boatner, Montana BLM's state fire management officer, the team reported to Reno, Nevada, on August 9, 1999.

Upon its arrival the safety team was asked to review a smoke inhalation incident that occurred on the Sadler Complex near Elko, Nevada. The team traveled to Elko on August 10, 1999, where it met with field office managers and fire staff. Team members also visited the Incident Command Post (ICP) and the fire line.

Based on what they learned from field staff and fire personnel, the team members believed the accidents that had occurred on the Sadler Complex warranted further investigation under BLM's serious accident investigation policy.

On August 10, 1999, the Nevada State Office requested the safety team be converted to a Serious Accident Investigation Team. Bob Lee, team member and New Mexico BLM state fire management officer, assumed team lead.

Overview

Investigation Procedures

The investigation team used several methods to obtain critical information surrounding the incident, including:

- Identifying, collecting and analyzing data associated with the entrapment and smoke inhalation incident;
- Analyzing weather, climate and fire behavior factors;
- Conducting interviews with key personnel involved in managing the Sadler Complex and associated operations;
- Visiting the fire line.

The primary intent of the review was to determine the facts regarding the entrapment and smoke inhalation incident. The team analyzed the information it collected using established wildland fire management guidance, including the Federal Wildland Fire Management Policy, BLM's Standards for Fire Management handbook, and the Fireline Handbook.

Incident Management

On August 5, 1999, a dry lightning storm passed through northern Nevada igniting numerous wildland fires. The Sadler, Table, Horse, and Pine fires were combined to form the Sadler Complex south of Elko, Nevada. The Nevada Department of Forestry (NDF) provided initial attack, and set up the initial Incident Command Post (ICP) at a highway rest area about 30 miles south of Carlin, Nevada. As the complexity of the incident increased, a Type III Incident Management Team (IMT) was assigned to the fires.

On August 6, 1999, Paul Hefner's Type II IMT was assigned to the complex and the ICP and base camp were moved to a location along State Highway 278 about 20 miles south of Carlin in Pine Valley. On August 8, 1999, a second, or spike, camp was established near the town of Jiggs, Nevada, on the east side of the fires.

On August 7, 1999, the Elko Field Office and NDF ordered a Type I IMT. The morning of August 8, 1999, Ed Storey's Type I IMT arrived in Elko, Nevada. Team members received an agency briefing at 2:00 p.m. and attended a transition briefing with Hefner's team at 7:00 p.m. After the meeting, Storey's team

went out to the ICP and the fireline to begin the transition. Storey's team assumed control of the Sadler Complex at 6:00 a.m. August 9, 1999.

The Crew

On August 5, 1999, the National Park Service (NPS) Pacific West Region assembled a Type II hand crew, called Golden Gate 3 (GNP3), at the Golden Gate National Recreation Area (NRA) in San Francisco, California. The crew consisted of 21 members from the following NPS units in California: Santa Monica Mountains NRA (4); Sequoia Kings Canyon National Park (5); Yosemite National Park (3); Lassen National Park (1); Lava Beds National Monument (1); and parks around the Bay Area (7). Everyone arrived at the Golden Gate Park mobilization site by about 8:00 p.m.

Of the 21 crew members, eight worked on fire suppression modules, five were from fuels management modules, and eight were from non-fire or overhead positions on their home unit. This was the first wildland fire assignment for five GNP3 crew members.

On August 6, 1999, the crew worked on fire cache projects and took a hike for exercise and to ascertain the crew members' level of fitness. The crew was dispatched to the Sadler Complex that afternoon and departed San Francisco about 5:00 p.m. aboard a contracted bus owned and operated by Special Operations. The crew traveled all night, stopping several times for fuel and meals. During the trip from San Francisco to Elko, one of the bus' windshield wipers and the bus' rear heater malfunctioned. Several of the crew members expressed concern about the way the bus driver was driving, and the driver told one of the crew members that he could not see well at night.

The crew arrived at the Sadler Complex on the morning of August 7, 1999. It was assigned to division C of the Pine Fire and worked on the line until about 10:30 p.m. When GNP3 attempted to return to camp at the end of the shift, the contracted bus failed to start. A crew member fixed the faulty relay switch. After driving all night and working all day, the bus driver complained of exhaustion.

On August 8, 1999, GNP3 worked on the Sadler fire from 6:00 a.m. to 11:00 p.m., and reported to Jiggs spike camp that night.

Overview

August 9, 1999

At 6:00 a.m., shift briefings were conducted by the IMT at the ICP and by Branch II Director Dan Huter at the Jiggs spike camp. The briefing at Jiggs started without an announcement, and some of the crews and overhead missed part or all of it.

Though a red flag warning had been issued on August 9, 1999, for high winds, low relative humidity (RH) and unstable atmospheric conditions, there was little emphasis placed on the weather and fire behavior forecast for the day at the Jiggs briefing. The fire behavior forecast issued on the Incident Action Plan (IAP) called for extreme fire behavior with high rates of spread. Dry conditions with increasing southerly winds were expected in the afternoon. The minimum RH was expected to be 6 to 12 percent, and a Haines Index of 6 was forecast. Fine fuel moisture was expected to be 3 percent.

The IAP for August 9, 1999, was incomplete, contained a number of mistakes, and there were not enough for all the fireline supervisors - - Tom Shepard, the division Q supervisor and Tim Horton, the crew boss of GNP3 did not receive one. There were no control operations instructions on any of the division assignment sheets in the IAP, and the branch directors' names were not listed. Buz Vanskike and Skip Hurt, operations section chiefs, had instructed the branch directors to formulate the plan for their branches.

The objectives listed on the Incident Action Plan were: 1) firefighter and public safety; 2) protection of structures; 3) suppression of the fire in the most cost-effective manner; 4) protection of historic cultural sites; 5) protect archeological sites in Aiken Canyon and Mineral Hill; 6) protect livestock.

After Huter's briefing at the Jiggs camp, Shepard (listed on the IAP as division O supervisor) met with the resources assigned to division O and Q of the Sadler fire. The resources were told to meet at the "Big Safety Zone" west of Indian Well near the northeast corner of the fire.

About 8:00 a.m., crew boss trainee Alex Naar and crew member Peter Giampaoli departed for Elko to get Giampaoli's boots repaired. The remaining 19 crew members departed for the fireline in the bus. En route, the bus again had mechanical problems and broke down eight-tenths of a mile from the Big Safety Zone. The GNP3 crew left the bus on the road and continued west on foot to the Big Safety Zone. The crew met

up there with other resources waiting for assignments, including the Smokey Bear Hotshots, the Dalton Hotshots, engines, and dozers.

In the IAP, the northeast part of the fire was shown as two divisions - O, under Shepard, and Q, under Mike Head. At some point, that was changed to one division - - Q - - with Shepard as division supervisor. There was confusion throughout the day on Branch II over division locations, assignments, and chain of command.

About 9:00 a.m., at the Big Safety Zone, Shepard briefed the crews on a plan developed by Huter. A road running south from the Big Safety Zone would be the fireline, but more than two miles along this road had not been burned out or secured. Active fire burned in this section. To the north of the Big Safety Zone, the road ran north-northwest for two miles to a "Y" intersection. From the Y a dozer line headed west across the head of the fire. The east-west dozer line was anchored on the west to a burned finger with a good safety zone in the black. That morning the main fire was about one-half mile from the dozer line, burning toward it.

The dozer line was located on relatively gentle, open rolling terrain on the break between hilly country covered with dense grass and piñon-juniper woodlands and an open, less densely vegetated flat. The aspect was north-facing, with several north-south trending shallow drainages and low ridges. The hills to the south blocked the view of the main fire from the dozer line. The Lucky Nugget Subdivision was northeast of the flat, about three miles from the dozer line.

The initial plan called for Smokey Bear and Dalton hotshot crews, with GNP3 in support, to burn the northeast flank from the Big Safety Zone to the north and west, and continue burning west along the dozer line on the north end of division Q. The two hotshot crews were reluctant to initiate that plan until the eastern flank south of the Big Safety Zone was secured. The hotshot crew superintendents went south to scout the area.

Numerous resources arrived on division Q throughout the day, some without being given an assignment or briefing. Shepard reported being swamped at this time by radio traffic, the number of resources reporting, the number of resources just turning up, and problems with dozer fueling. Operations were delayed in part by the heavy workload he faced.

Overview

About 11:00 a.m., the hotshot superintendents returned from their reconnaissance to the south. When Shepard asked them to burn the dozer line across the head of the fire, they refused to accept the assignment until the east flank to the south was secured. Instead, both hotshot crews went south of the Big Safety Zone to secure the line by burning out. Head, originally assigned on the IAP to supervise division Q, accompanied the hotshot crews and remained with them for the rest of the day while the crews completed the burn out of the northeastern flank. GNP3 remained in the Big Safety Zone waiting for an assignment.

In the Big Safety Zone, Huter, Shepard, and GNP3 Crew Boss Tim Horton discussed stopping the northern progress of the fire. Horton told Huter that his crew had lots of burning experience and that they could burn the east-west dozer line if safety zones were constructed.

About 1:00 p.m., Huter and Shepard decided that the GNP3 crew would backfire the 1.3 miles of dozer line on the north. The crew was transported with its tools and line gear in the back of Huter's and Shepard's pickup trucks two miles northwest of the Big Safety Zone to the Y at the intersection of the road and the east-west dozer line.

From the Y, the GNP3 crew hiked 1.3 miles to the west end of the dozer line at the Black Safety Area. Along the way, the crew saw the four safety zones that had been constructed along the line. Counting the safety zones at each end of the dozer line, there were a total of six, located an average of 1,370 feet apart. The actual distance between safety zones varied. Engines 3639 and 3636 drove to the west end of the dozer line and joined up with GNP3 and a dozer already in the area. Huter and Shepard joined GNP3 and the others at the west end of the dozer line.

About 2:00 p.m., the GNP3 crew held a safety briefing, then lined out to conduct the burning operation. The wind became unfavorable and the ignition was delayed. Huter and Shepard discussed options, and seeing that the smoke column from the main fire was advancing toward the dozer line, they felt if they "didn't attempt a burn the fire would get away." The plan to burn to the east from the Black Safety Zone had to be changed because of the unfavorable wind. The revised plan was to begin burning from the Y intersection to the west along the dozer line.

Horton regrouped the GNP3 crew and briefed it on the change of plans. He did not feel confident about using the entire crew because of the inexperience and lack of fitness of some crew members. He selected three people to take with him for the firing squad, based on their experience and physical fitness. The other 15 crew members remained in the Black Safety Zone at the west end of the dozer line.

About 2:30 p.m. Horton, David (Ty) Deaton, Keren Christensen, and David Hyde loaded into the back of Shepard's truck and were taken east to the Y. Engine 3636 followed to support the firing squad. While driving to the Y, Shepard encountered Bob Hawkins, field observer, and Joe Reyes, an unassigned division supervisor, and asked them to help "keep an eye on the burn."

Upon reaching the Y intersection at about 3:00 p.m. the firing squad immediately unloaded from the vehicle, lined out, and began moving west backfiring from the dozer line with Engine 3636 supporting them. (See Figure 1) The fireline southeast of the Y was unsecured. Because of the hills to the south, no one involved with the backfire could see the main fire until just before the entrapment. There were no aircraft over the dozer line during the firing operation.

Initially the firing squad lined out in a four-deep strip firing pattern, but they abandoned that tactic when the backfire moved so quickly that only one drip torch was needed. The squad members had to walk on the dozer line, and the fire burned hot and fast, pushing them along quickly. The squad had to move very fast along the dozer line and Shepard instructed it to not out distance its support. Shepard, E-3636, and Hawkins shot some flares into the backfire to build up heat. Shepard then returned to the Y to arrange fueling for a dozer there.

The backfire progressed quickly with good results. The flame lengths were about two feet in grass and six feet in sage. There was a generally good draw from the main fire, but the firing squad members encountered several wind shifts that forced them to back away from the line or speed up their burning. To stay ahead of the backfire they had to move at a fast walk and occasionally trot.

Engine 3636 was very busy behind the firing squad catching spot fires and slopovers. At about 3:15 p.m., there were a number of spot fires over the line, and Engine 3636's crew leader radioed, requesting the firing to stop. There was no response to this request.

Sadler Entrapment Map 1

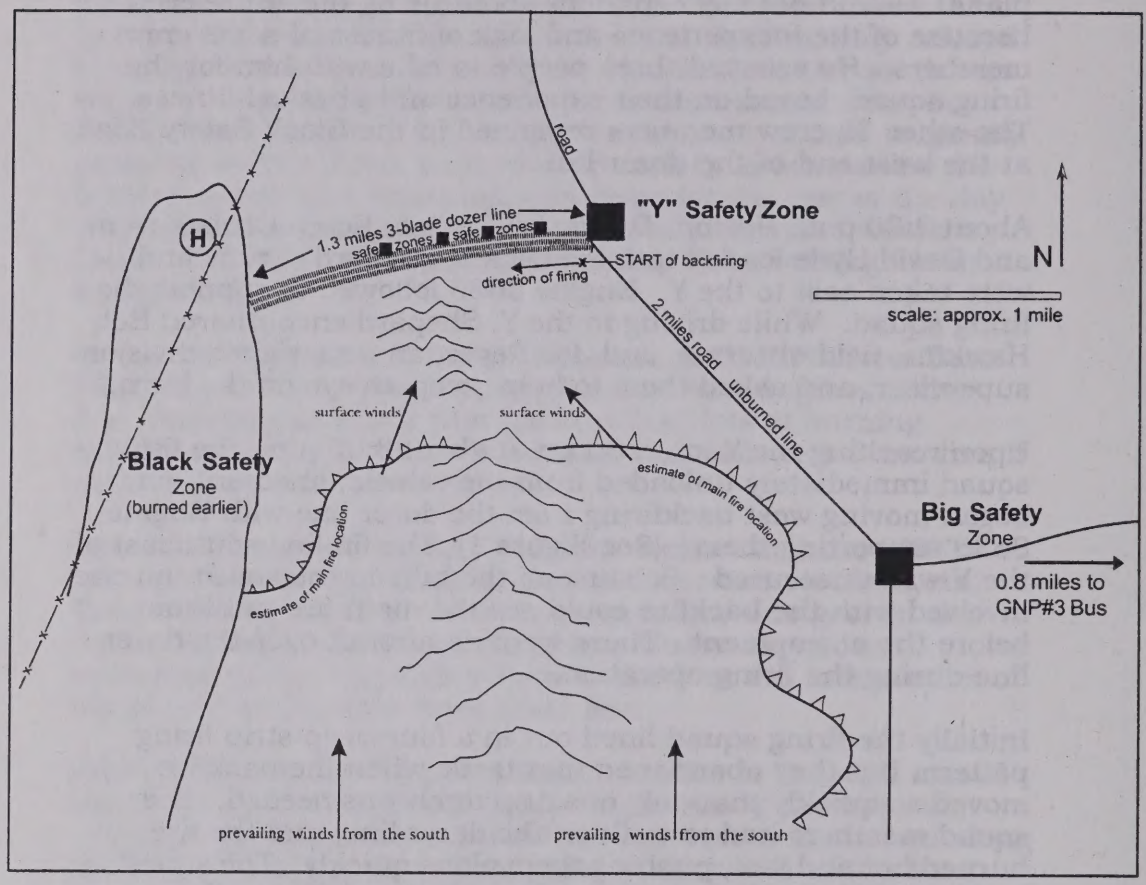


Figure 1. *August 9, 1999 at around 3:00 p.m. the backfiring operation begins.*

At the same time, two burnout operations and the backfire were being conducted on the same tactical frequency. The tactical channel was heavily overloaded, and the command frequency was clogged with logistics traffic. The GNP3 crew was using its crew frequency for communication, and Horton was using the scan feature on his radio to monitor the tactical frequency.

About 3:30 p.m., when the firing squad was about halfway through the 1.3-mile backfire, a Nevada Division of Forestry (NDF) engine caught up with them. The engine had picked up Naar and Giampaoli, the two GNP3 crew members who had gone into Elko that morning, and given them a lift. The firing squad stopped while the two got off the NDF engine. The engine left, and Naar and Giampaoli joined the firing squad

bringing the total number to six. To keep ahead of the fire, the firing squad members had to begin lighting again and move very quickly. (See Figure 2) The fire activity was increasing as the main fire approached their location, though the firing squad had not heard any warnings.

At about 3:40 p.m. Huter, dozer bosses Jim Allen and Gerry Beddow were watching the backfire operation from about three-tenths of a mile to the west of the squad. As the main fire became visible near the firing squad, these three people saw a fast moving "river of fire" take off down from the hills toward the dozer line and squad. Huter tried to contact the crew members several times on the radio to warn them but there was no response.

Sadler Entrapment Map 2

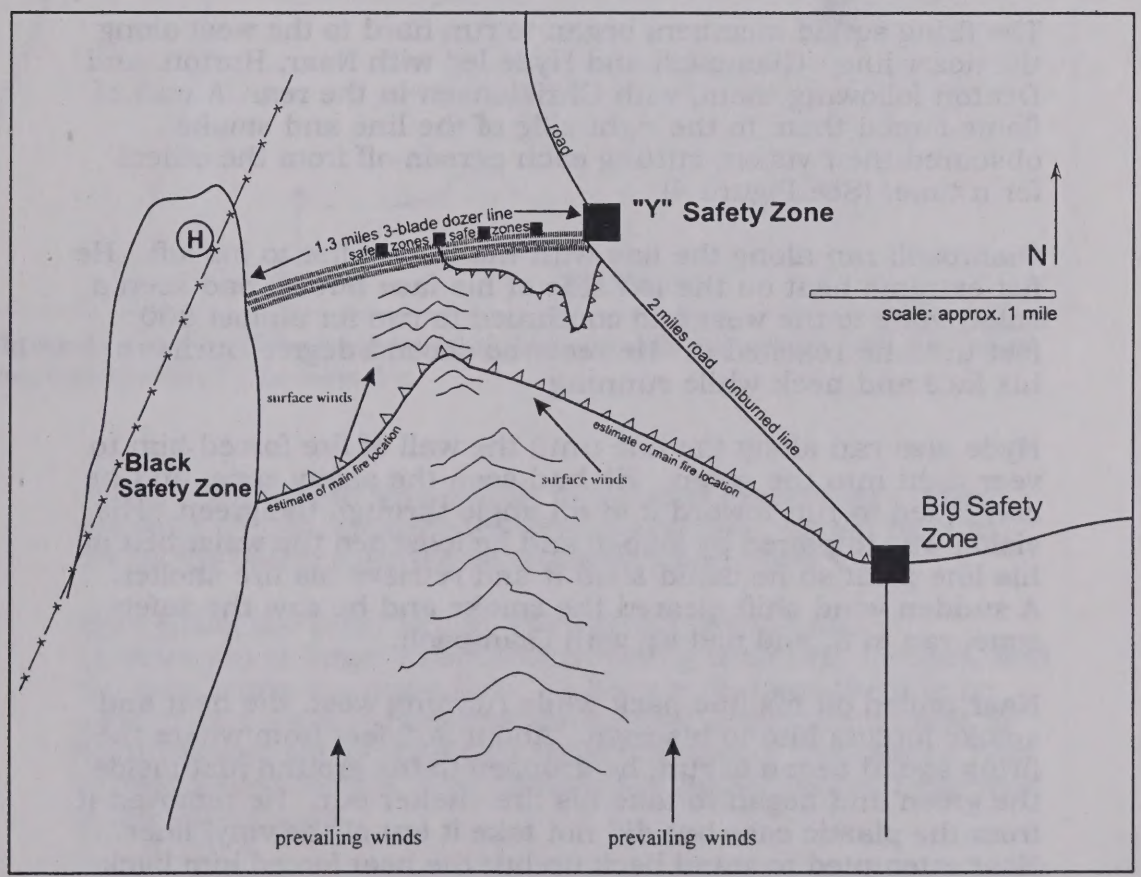


Figure 2. *Location of the firing squad on August 9, 1999 at around 3:30 p.m.*

On the dozer line, the firing squad was moving west toward Huter, Allen and Beddow. As the main fire approached the line near the firing squad, a fire whirl started and swirled across the dozer line. The fire whirl started numerous spot fires that grew quickly in the green to the north of the line.

Engine 3636, unable to keep pace with the firing squad, was cut off from them by the fire whirl. The engine retreated into the nearest safety zone on the dozer line and waited it out, surrounded by fire.

The firing squad stopped to watch the fire whirl cross the line behind it. They discussed catching the spot fires, but Horton yelled, "Let's go, go, go!" The squad members resumed firing and had proceeded about 90 feet when they noticed a wall of fire bearing down quickly on them from inside the line. Horton ordered them to stop burning and yelled "Go, go, go, run!" (See Figure 3)

The firing squad members began to run hard to the west along the dozer line. Giampaoli and Hyde led with Naar, Horton, and Deaton following them, with Christensen in the rear. A wall of flame forced them to the right side of the line and smoke obscured their vision, cutting each person off from the others for a time. (See Figure 4)

Giampaoli ran along the line with the wall of fire to his left. He felt extreme heat on the left side of his face but he had seen a safety zone to the west and continued to run for almost 600 feet until he reached it. He received second degree burns to his face and neck while running.

Hyde also ran along the line until the wall of fire forced him to veer right into the green. He had seen the safety zone, and he continued to run toward it at an angle through the green. His vision was impaired by smoke and he loosened the waist belt of his line pack so he could shed it and retrieve his fire shelter. A sudden wind shift cleared the smoke and he saw the safety zone, ran to it, and met up with Giampaoli.

Naar pulled off his line pack while running west, the heat and smoke forcing him to his right. About 365 feet from where the firing squad began to run, he dropped to the ground just inside the green and began to take his fire shelter out. He removed it from the plastic case but did not take it out of the vinyl liner. Naar attempted to stand back up but the heat forced him back to the ground. He heard Christensen call out for help, and he

Sadler Entrapment Map 3

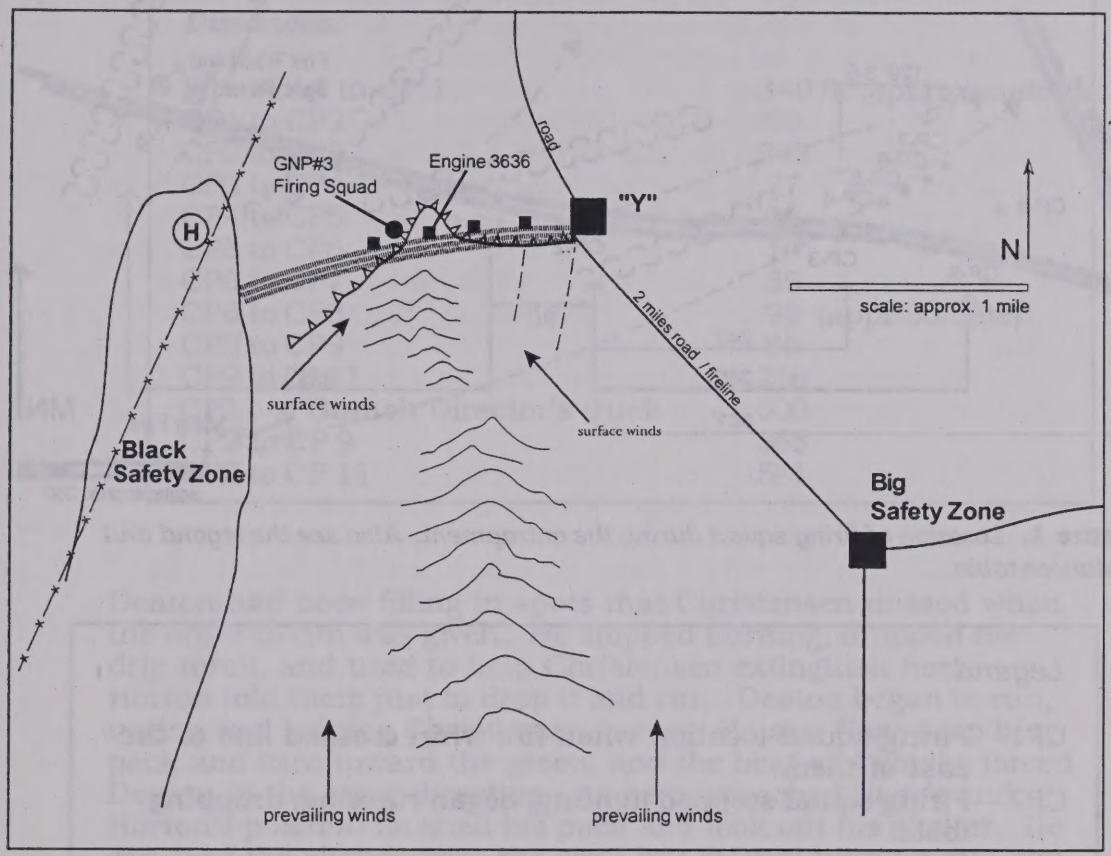


Figure 3. *Location of the firing squad on August 9, 1999 at around 3:40 p.m. when they were overrun by the main fire.*

tried to look up but was unable to because of the heat. When the wind shifted, clearing the smoke and heat, he got up and ran to the safety zone where Giampaoli and Hyde were.

After giving the order to run, Horton told Deaton and Christensen to forget about extinguishing their drip torches, and ran west along the dozer line. As he moved down the line he was hit by a wave of heat and smoke that forced him to dive to his right onto the ground just inside the green. He landed next to Naar and when the wind shifted they both stood and ran west to the safety zone.

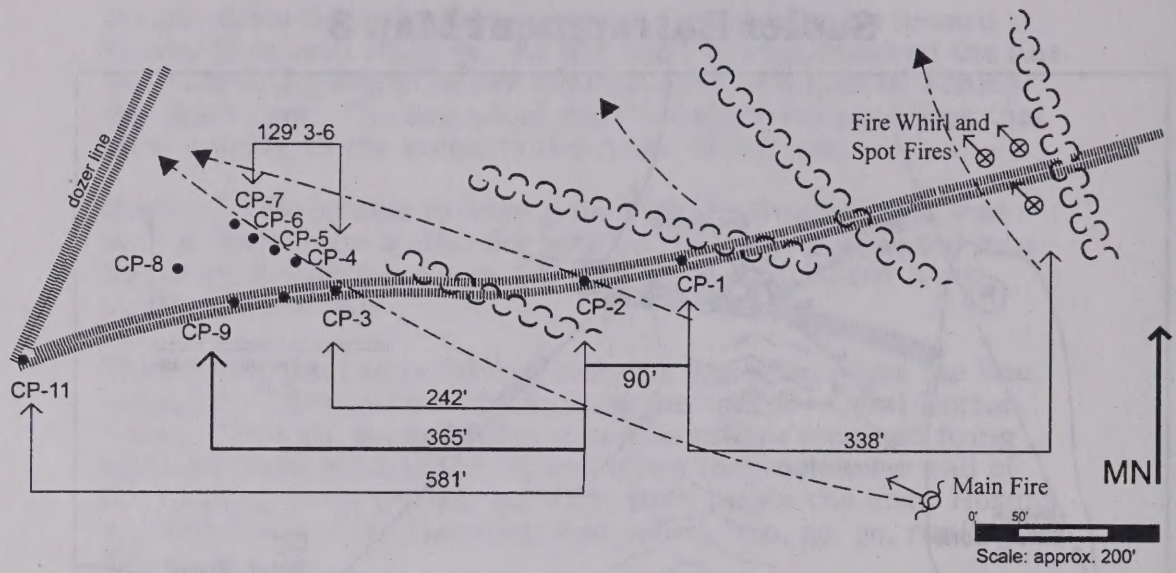


Figure 4. *Location of firing squad during the entrapment. Also see the legend and distances table.*

Legend:

CP1	Firing squad location when fire whirl crossed line to the east of them.
CP2	Firing squad stopped lighting, began running, dropping tools.
CP3	Dozer push-out. *- fusee stick*
CP4	Gear dropped and scattered. *- 8 unburned fusees* *- 1 burned fusee* *- 1 burned headlamp*
CP5	Burned remains of Christensen's line pack.
CP6	Christensen unfolds shelter, sheilds herself with it, calls for help.
CP7	Melted vinyl shelter cover.
CP8	Deaton's approximate location when Christensen saw him when smoke shifted.
CP9	Naar, Horton, Deaton fall to ground. *- 1 canteen* *- 5 unburned fusees* *- vinyl package and pull-tab for shelter*
CP11	Safety zone

Distances:

Fire whirl to CP 1	340 ft. (approximate)
CP1 to CP2	90
CP2 to CP3	242
CP3 to CP4	77
CP4 to CP5	38
CP5 to CP6	14
CP6 to CP7	35
CP6 to CP8	90 (approximate)
CP3 to CP9	85
CP9 to CP11	216
CP11 to Branch Director's truck	500
CP2 to CP 9	365
CP2 to CP 11	581

Deaton had been filling in spots that Christensen missed when the order to run was given. He stopped burning, dropped his drip torch, and tried to help Christensen extinguish hers. Horton told them just to drop it and run. Deaton began to run, urging and helping Christensen to run. He saw Naar drop his pack and turn toward the green, and the heat and smoke forced Deaton in the same direction. As he approached Naar's and Horton's position he shed his pack and took out his shelter. He removed the shelter from the vinyl but did not have time to deploy before the heat forced him to the ground by Naar and Horton. He lay face down and looked west and saw the safety zone. He got up, yelled for Christensen, and went about 80 feet into the green looking for her. She saw him, caught up with him, and they moved together to the safety zone.

Christensen was lighting when the order to "go, go, go, run!" was given. She spent a few moments trying to extinguish her drip torch with her gloved hand and the help of Deaton, but Horton yelled to them to forget it and run. She dropped the drip torch and began running west following Deaton, her vision hindered by smoke. Deaton helped and encouraged her to run, and she became tired so she dropped her tools. A surge of intense heat forced her to the right, and she ran over a dozer push-out into the green. Christensen ran 115 feet into the green while removing her pack because she was having difficulty taking out the fire shelter. Throwing her pack on the ground, she grabbed the shelter and moved to a deployment site

15 feet away. While taking the shelter out of the packaging she had difficulty pulling the red tab to open the vinyl packaging. She tore open the vinyl, and finally removed the shelter. Shaking the shelter out, she radioed for help, and began getting into the shelter as she yelled out for help. Before she got all the way into the shelter, the wind shifted, clearing the smoke enough for her to see Deaton and move to the safety zone with him. She received second degree burns to the face and neck.

While the firing squad was being overrun, the 15 GNP3 crew members waiting in the Black Safety Zone heard Christensen's radio call for help. Worried, they moved deeper into their safety zone and began to improve the area. Engine 3639 accompanied them.

After the wind shift, Huter observed some of the firing squad attempting to deploy shelters in what he believed was the green area. He was not able to see that they were congregating in the safety zone, and he waved his hands and yelled to them to move down the dozer line to his location (about 500 feet).

The six crew members, feeling the safety zone was too small, ran down the dozer line to Huter's location. Huter inquired about injuries and finding that Naar was an EMT, he instructed Naar to take charge of EMT duties and to administer oxygen from his trauma kit. Some of the crew members were coughing severely.

Huter gave his vehicle to Horton to drive himself and the five crew members to the west end of the dozer line, where they joined the 15 other crew members of the GNP3 crew.

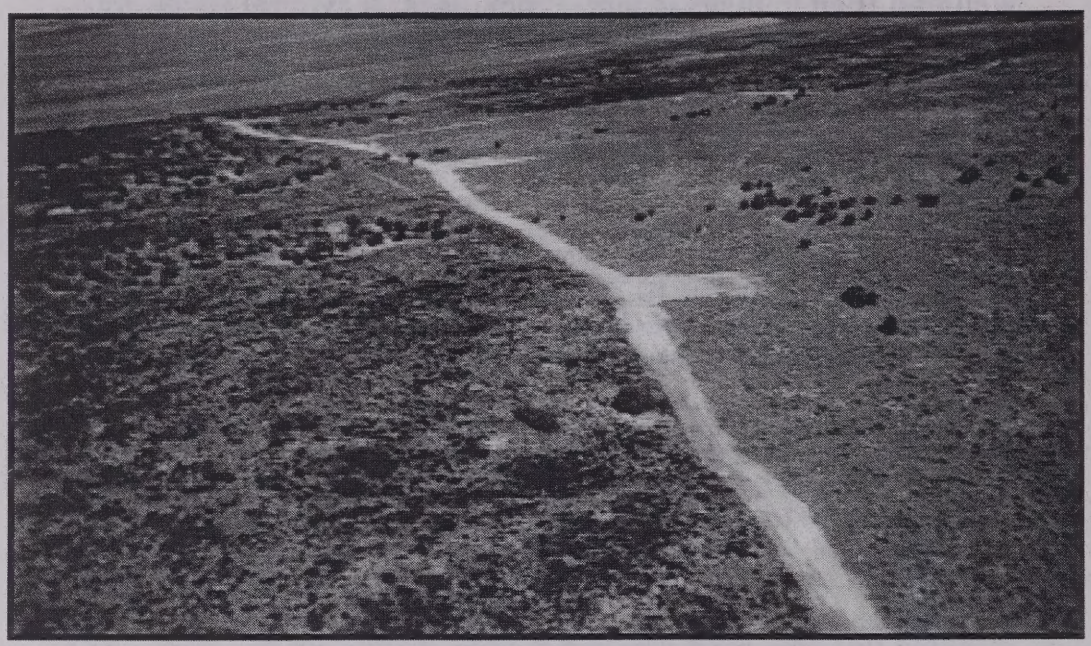
About 4:00 p.m., Huter called for a helicopter medical transport of the crew. Then he and dozer boss Allen completed the burning operation from the escape to the west end of the dozer line.

Dozers, engines, and crews worked to flank the escaped fire as it ran down into the more sparsely vegetated flat. The fire was pinched off that evening after it burned for just over a mile. The final control line was about two miles from the Lucky Nugget subdivision.

Christensen and Giampaoli were flown by helicopter directly from the line to the ICP for initial treatment. From there they

were taken by ambulance to the hospital in Elko where they were treated for second-degree burns and smoke inhalation. The other 19 crew members were flown by helicopter to Indian Well and then to Jiggs camp. From Jiggs, they were taken by bus to the Elko hospital where Horton, Naar, Hyde, and Deaton were examined and treated for smoke inhalation. Christensen, Giampaoli, and Naar were kept overnight in the hospital for observation while the rest were released and billeted in a motel. Storey notified the Elko BLM office of the hospitalizations about 8:00 p.m.

Christensen, Giampaoli, and Naar were released from the hospital on August 10, 1999, and were expected to recover fully. They rejoined the rest of the crew at the motel in Elko to await a critical incident stress debriefing session.



The northern portion of the dozer line with the escape in the background.

Fire Behavior Summary

Location

Northeastern Nevada in the Dixie Creek drainage south of Elko. Township 31N Range 54E Section 22 east of Dixie Creek.

Fuels

Fuels in the area near the incident consisted mainly of sagebrush and rabbitbrush over a continuous or unbroken mat of cured cheatgrass. The investigators estimated there was ½ to 1 ton per acre of cheatgrass. Scattered juniper trees were more dense to the south and uphill from the dozer line and diminished to the north into the flat areas. Though the junipers would not have contributed significantly to surface spread, they certainly contributed to intensity and acted to produce embers for starting spot fires. This fuel would best be characterized as a fuel model 2. Reports from local managers indicated the amount of cheatgrass was unusually high this year and fire managers said normal suppression tactics had been ineffective. Under this season's conditions, cheatgrass fires suppressed by normal methods would hold heat and re-ignite.

Dead fuel moisture: One hour fuel moisture was estimated to be 3- 4 percent, based on the low relative humidity and temperatures in the mid 80s. In addition the 10 and 100 hour fuels were estimated to be in the 5-7 percent range due to limited humidity recovery during the previous two nights.

Live fuel moisture: It was estimated to be less than 80 percent, a low reading that can lead to extreme fire behavior in brush fuel types.

Topography

The entrapment occurred at the north end of a ridge to the southeast of Dixie Flats. This ridge runs from south to north, and influences the winds in the area. The elevation at the site was 5,640 feet and slopes were less than 10 percent at the entrapment site, but up to 35 percent on the hill where the fire whirl formed.

Weather Summary

Wind speed and direction: Wind at the Crane Springs Remote Automatic Weather Station (RAWS) site during the day was from the southeast at 10 to 16 miles per hour with peak gusts of 23 to

27 miles per hour. Winds along the dozer line were reported to be light and variable in direction. Winds were from the southwest at the west end of the dozer line and from the east and southeast at the east end of the dozer line. This variance in the wind direction most likely resulted from the influence of the ridge to the south of the entrapment site. The wind at the Crane Springs RAWS at 4:11 p.m. was 16 miles per hour from the southeast.

8/9/99 Weather at 1400 hours taken by GNP3:

Temperature:	85 degrees
Relative Humidity: 13%	
Wind speed/direction:	Not noted

8/9/99 Weather at 1511 hours from the Crane Springs RAWS:

Temperature:	84 degrees
Relative humidity: 7%	
Wind speed	16 MPH with gusts to 27 MPH.
Wind direction:	Southeast.

8/9/99 Haines index for Elko: 6

Fire Behavior

The main fire was driven to the north by southerly winds, though the wind direction on the ground was influenced by topography. Interviews with line personnel at the site did not support the possibility of plume development. Erratic winds at the surface caused short term runs in multiple directions, both up and downslope.

During the day on August 9, reports at the entrapment site indicated light (0-7 mph) and variable winds primarily from the east, southeast, and southwest. The nearby Crane Springs RAWS showed winds from the southeast ranging from 10 to 16 MPH during the morning and early afternoon on the day of the entrapment. Given the general winds from the south, it is conceivable that surface winds could have wrapped around the small range of hills south of the incident site. This wrap would have caused wind shifts on the ground from east and southeast to southwest and back again.

The initial plan was to backfire from west to east to take advantage of favorable winds at the west end of the dozer line. At that time, the winds were from the southeast. Before the firing began, the wind shifted to the southwest, and the plan

was changed to start at the east end of the dozer line and move west.

When the firing began at the east end of the line the winds were light from the east and southeast. The firing squad reported that the fire sometimes chased them along the dozer line. Based on the general wind and topography, the winds at each end of the dozer line could have been different; southwest at the west end and east to southeast at the east end of the dozer line.

Fire Behavior By Location
(using values for fine fuel moisture 3% and live fuel moisture at 80% for all locations)

Beginning of back fire operation, moving west from the Y

Slope:	5%
Wind speed:	5 MPH
Wind direction:	Northeasterly (up slope)
Rate of spread:	47 chains per hour
Flame length:	6-7 feet

During the initial firing, very favorable winds were reported pulling into the fire. The backfire had the opportunity to travel north up a long straight drainage. People following the firing squad (Engine 3636, Shepard, and Hawkins) contributed to adding heat in the east end of the burn by shooting flares. The primary burn team continued at a rapid pace to the **west,** slowing a few times when fire behavior increased and stopping once to join with two additional crew members. During this time the wind periodically shifted to the east and pushed the back fire along the dozer line. During these runs the fire was pushed up slopes of almost 25 percent by winds of 5-10 miles per hour. At these times the rate of spread (ROS) would have reached 163 chains per hour with flame lengths close to 14 feet.

Main fire at the time of the entrapment

Slope:	25%
Wind speed:	12-16 MPH
Wind direction:	Southeast, (down slope)
Rate of spread:	216 - 367 chains per hour
Flame length:	15-19 feet

As the firing continued, the main fire became more active and continued spreading downhill to the north. When the main fire

Fire Behavior Summary

front crested the ridge just south of the entrapment site, the stronger south to southeast ridge top winds began to influence the fire. These winds pushed the fire rapidly downhill. As the fire front rolled over the ridge it was described by one witness as a "river of fire." Photos show that a fire front in excess of 500 feet rapidly moving to the north toward the dozer line and firing squad.

As the main fire and the backfire merged a fire whirl formed about 200 feet south of the dozer line. This fire whirl moved to the north and crossed the dozer line about 340 feet east of the GNP3 firing squad. This fire whirl caused numerous spot fires across the line that quickly spread to the north.

Immediately after the fire whirl started the spot fires, the main fire moved rapidly toward the line at a speed over 300 chains per hour (330 feet per minute) and with flame lengths exceeding 15 feet. This rapid rate may have been compounded by a small drainage next to the dozer line that funneled winds and fire into even faster rates in a "venturi" effect. These spread rates and flame lengths far exceeded the ability of hand crews to engage in direct attack.

The fire behavior forced the squad to run for its safety zone. All but two firefighters were unable to cover the distance to the safety zone (about 500 feet) before the fireline intensity forced them off the dozer line and onto the ground.

<u>Escaped fire after the entrapment</u>

Slope:	5-15%
Wind speed:	7-11 MPH
Wind direction:	South, down slope
Rate of spread:	155-210 chains per hour
Flame length:	13 feet

When the fire whirl crossed the dozer line, numerous spot fires were started. In addition, the main fire most likely caused spots as it bumped the line. Probability of ignition was 90% and there were several juniper trees near the line that torched.

Reports from the site indicate that the wind speed slowed to 7 to 11 mph soon after the spot fires started. The escaped fire continued to spread to the north while crews, engines, dozers and aircraft conducted a flanking operation. The fire was contained in about two hours after spreading about 1.6 miles.

Conclusion

Three alternatives of fire behavior were investigated.

1) A collapse of a plume dominated fire:

   As noted previously, there is insufficient evidence to support the formation and collapse of a plume.

2) The possibility that the firing squad was overrun by their own backfire in a "hook":

   Using BEHAVE fire predictions and reviewing the more intricate topographic patterns, the investigators were unable to model a fire that would "hook" ahead of the firing squad. The fire whirl likely was caused by contact between the backfire and main fire.

3) The firing operation was unable to be completed before contact by the main fire:

   It is our conclusion that the firing squad was unable to complete its backfiring task before being overrun by the main fire. Spread from the main fire was predictable given forecasted weather and fire behavior. The investigators had no reason to believe that any unforecasted fire event occurred.

The 10 Standard Firefighting Orders and 18 Watch Out Situations are designed to help firefighters be aware of dangerous circumstances and reduce firefighting risks. They also serve as an analytical tool to help assess what errors might have occurred during an incident. Federal wildland firefighters are instructed in the 10 Standard Orders and 18 Watch Out Situations and are expected to recognize and know them.

The investigation team used the 10 Standard Fire Orders and the 18 Watch Out Situations to assess the performance of individuals on the Sadler Fire on August 9, 1999. It found that all of the 10 Standard Fire Orders and 13 of the 18 Watch Out Situations were compromised.

The 10 Standard Firefighting Orders

1. Fight fire aggressively, but provide for safety first.

   The backfire conducted by the GNP3 firing squad was too aggressive a tactic for the existing conditions. Huter and Shepard did not adequately provide for safety. During the backfiring operation, lookouts were not posted, the safety zones were too far apart for the burning conditions, and the line behind the firing squad was unsecured.

   The Dalton and Smokey Bear hotshot superintendents, Neil Metcalf and Rich Dolphin, provided for safety first by securing the eastern flank south of the Big Safety Zone.

2. Initiate all action based on current and expected fire behavior.

   Storey, Vanskike, Hurt, and Jeff Luff, planning section chief, did not give sufficient emphasis to the observed and expected fire behavior when planning for the day operational period or during the briefing on August 9, 1999.

   Huter, Shepard and Horton did not appropriately consider observed and expected fire behavior when planning and initiating the backfire operation.

   The fire behavior forecast for August 9, 1999, was not distributed to all line personnel.

3. Recognize current weather conditions and obtain forecasts.

   Huter, Shepard, and Horton did not take changing fire behavior into account when planning and initiating the backfire operation.

   Huter and Shepard did not take the current weather into account when planning and initiating the backfire.

4. Ensure instructions are given and understood.

   Luff, Vanskike and Hurt did not include operational assignments on the IAP.

   Vanskike and Hurt did not give adequate instructions to the line overhead.

   The morning briefing in Jiggs on August 9, 1999, was inadequate and was not attended by all line personnel.

   The briefing prior to the initiation of the backfire did not adequately or clearly address lookouts, communications, escape routes or safety zones.

5. Obtain current information of fire status.

   Huter, Shepard and Horton did not have current information on the status or actual location of the main fire when the backfire was begun.

6. Remain in communication with crewmembers, your supervisor and adjoining forces.

   Vanskike and Hurt were not monitoring operations on Branch II and were unaware of the backfire plan or its initiation.

   Huter and Shepard were not in contact with each other during the backfiring operation. They also did not maintain contact with the firing squad as they burned.

   Horton did not maintain communications with his supervisors during the backfiring operation.

7. Determine safety zones and escape routes.

   Although safety zones and escape routes had been established and identified, the safety zones created by

dozers were too far apart for weather and fire behavior conditions.

The firing squad had to move very quickly to stay ahead of the backfire and was unable to use the black as a safety zone.

8. Establish lookouts in potentially hazardous conditions.

Huter, Shepard, and Horton did not clearly designate or post lookouts during the backfire operation.

9. Retain control at all times.

Vanskike and Hurt were not supervising tactical operations on Branch II.

Shepard did not exercise sufficient control of tactical operations on division Q.

10. Stay alert, keep calm, think clearly, act decisively.

A strong focus on the tactical mission caused key personnel to neglect calm and clear deliberation of the proposed tactics. Despite numerous warning signs, no one acted decisively to interrupt the urgent "heads down" focus on the tactical mission.

Huter made poor decisions regarding tactical operations.

18 Watch Out Situations

1. The fire is not scouted and sized up.

Huter, Shepard and Horton did not scout or size up the main fire before initiating the backfire. They were not aware of the exact location of the main fire prior to ignition.

2. You are in country not seen in daylight.

This was not an issue.

3. Safety zones and escape routes are not identified.

Although safety zones and escape routes were identified, they were too far apart for observed and predicted weather and fire behavior.

4. You are unfamiliar with weather and local factors influencing fire behavior.

   This was not an issue.

5. You are not informed of tactics, strategy, and hazards.

   There were no instructions under the "Control Operation" section of the division assignments on the IAP. Vanskike and Hurt gave the branch directors the responsibility for making operational assignments and tactical decisions.

   On the line that day there was extensive confusion about tactics, and insufficient information and discussion concerning hazards.

6. Instructions and assignments are not clear.

   Instructions and assignments were unclear from the operations section chief level down to the levels of crew boss and firefighters.

7. No communication link has been established with crewmembers or your supervisor.

   Horton did not have communications with Huter or Shepard at the time of the entrapment. This was because the tactical frequency was overloaded and Horton was too actively involved in the backfiring operation.

8. You are constructing line without a safe anchor point.

   The Y safety zone used as the anchor point for the backfiring operation was not tied into cold black or natural barriers. It was not secured to stop the spread of fire or prevent flanking of the east-west dozer line.

9. You are building fireline with fire below.

   This was not an issue.

10. You are attempting a frontal assault on the fire.

    The backfiring operation was a frontal assault of a 170,000-acre fire.

11. There is unburned fuel between you and the fire.

When the backfiring operation began, there was about one-quarter to one-half miles of unburned fuel between the firefighters on the dozer line and the head of the main fire.

12. You cannot see the main fire and are not in contact with someone who can.

    No one on the dozer line could see the main fire until just before the firing squad was overrun. There were no aircraft over the backfiring operation. Because of intense radio traffic, most of the personnel on division Q were not in contact with anyone who could see the main fire.

13. You are on a hillside where rolling material can ignite fuel below you.

    This was not an issue.

14. The weather is becoming hotter and drier.

    All the line overhead involved in the entrapment ignored warning signs that the weather was becoming hotter, drier, and very unstable.

15. The wind is increasing and / or changing direction.

    Huter, Shepard and Horton all observed the wind shifting directions and changing speed regularly as they prepared to initiate the burning operation.

16. You are getting frequent spot fires across the line.

    Engine 3636 was trying to handle numerous spot fires just before the entrapment.

17. The terrain and fuels make escape to safety zones difficult.

    Extreme fire behavior in flashy fuels made it difficult to escape to safety zones, and for a brief time, it was impossible. A fortuitous wind shift allowed the GNP3 firing squad to escape the fire.

18. You are taking a nap near the fireline.

    This was not an issue.

Fire Behavior and Environmental Factors

Fuels

Due to a wet winter and spring, the fuel loading in northern Nevada was abnormally heavy. Throughout the 1999 season, normal fire suppression tactics were found to be ineffective. In particular, direct attack and burning operations during the heat of the day had failed repeatedly on previous fires. The IMT operations section was aware of this condition because it had been briefed on it by the Elko Field Office and encountered the conditions on previous fires this season in the Great Basin.

Weather

The weather and fire behavior forecasts for August 9, 1999 predicted extreme burning conditions. A red flag warning had been issued for that day for high winds, single digit humidity, and a Haines Index of 6. The backfire operation began at about 3:15 p.m. The most current weather observations were taken at 2:00 p.m. Horton at the west end of the dozer line, 1.3 miles away from the starting point. The temperature was 85 degrees Fahrenheit and the relative humidity was 13 percent.

At 3;11 p.m., the nearby Crane Springs RAWS recorded a temperature of 84 degrees, 7 percent relative humidity, and a wind speed of 16 mph out of the southeast At 4:11 p.m., the temperature was 84, relative humidity was 8 percent and wind speed was 13 mph from the south.

Topography

The topography at the entrapment site was relatively gentle, open rolling terrain. The aspect was north-facing, with several north-south trending shallow drainages and low ridges. The dozer line where the entrapment took place was located on the break between hilly country covered with dense grass and piñon-juniper woodlands and an open, less densely vegetated flat. The elevation was about 5,600 feet, the slopes were 10 percent or less.

Predicted Versus Observed Fire Behavior

The forecast for fire behavior on August 9, 1999, predicted extreme fire behavior with high rates of spread. Dry conditions with increasing southerly winds were expected in the

afternoon. The minimum relative humidity was expected to be 6 to 12 percent, and a Haines Index of 6 was forecast. The fire behavior forecast called for fine fuel moisture of 3 percent.

The observed fire behavior was consistent with the forecast. On August 9, 1999, the observed rates of spread were 140 to 160 chains per hour, which was close to the predicted rates of spread of 156 to 211 chains per hour. The observed flames lengths were 10 to 20 feet, which was close to the predicted flame lengths of 13 to 15 feet.

Smoke

Smoke was not a contributing factor in the conditions leading to the entrapment.

Visibility

The visibility was adequate, except where blocked by terrain, and the smoke at the time of the entrapment.

Incident Management

The IMT failed to watch out for the safety of the firefighters on the line, and did not work under the premise that safety is the highest priority. Storey, Vanskike, Hurt, Luff, Sessions, and Huter were all deficient regarding firefighter safety.

Objectives

The objectives listed on the IAP were: 1) firefighter and public safety; 2) protection of structures; 3) suppression of the fire in the most cost-effective manner; 4) protection of historic cultural sites; 5) protect archeological sites in Aiken Canyon and Mineral Hill; and 6) protect livestock.

There was considerable pressure from local ranchers and elected officials to do more to limit the acreage burned on the Sadler Fire; this was a contributing factor to the strong sense of urgency on the line the day of the entrapment.

Strategy

The strategy developed on August 9, 1999 for Branch II, division Q, was inappropriate. The dozer line across the head of the fire

was located where the view of the main fire was obstructed by hills. The dozer line was also located between the main fire and a flat area with lighter fuel loading where conditions would have been much less hazardous. The flat area with the lighter fuels was still two miles away from the Lucky Nugget Subdivision.

The initial plan called for two hotshot crews, Smokey Bear and Dalton, supported by the GNP3 crew, to burn out and backfire the 3.3 miles unsecured line along the northeast flank starting at the Big Safety Zone and across the head of the fire. The hotshot crews declined that assignment and instead stated that about two-plus miles along the east flank south of the Big Safety Zone should be secured before backfiring the dozer line.

Tactics

Backfiring the head of a 170,000 acre fire in the afternoon during red flag warning and extreme fire behavior conditions was a hazardous tactic. A squad from a moderately experienced Type 2 crew supported by one engine was a poor choice of forces for that action. Anchoring and flanking with dozers, handcrews, engine support and aerial supervision was the only reasonable tactic on a day when extreme fire behavior was expected. The line that was backfired was unsecured behind the firing squad, and the firing was not directly supervised by Shepard, Huter, Vanskike or Hurt.

Safety Briefings and Major Concerns

The weather forecast and fire behavior forecasts were not given adequate consideration in strategic or tactical planning for the shift, or during the day.

The briefing held prior to lighting the backfire was inadequate and failed to adequately address lookouts, communications, and chain of command. Though escape routes and safety zones were established and identified, the safety zones were too far apart for forecasted and observed burning conditions.

Instructions Given

The IAP for August 9, 1999, was incomplete, contained a number of errors, and was not distributed to all of the crews and overhead on division Q. The branch directors were not

named, division O and division Q were listed with division supervisors assigned, but on the line there was only division Q. No instructions were given under the control operations section of any of the division assignments - - the only comment was "will be announced at the briefing." This might be expected on the first day a team was on a fire, but the Type 1 IMT had taken over the fire from a Type 2 IMT that had put out a complete IAP for the previous shift.

There were insufficient IAPs available for line overhead and crew supervisors. Huter received only four IAPs for the August 9, 1999 day shift. Shepard and Horton did not receive IAPs. The people on the line that day reported persistent confusion throughout the day over division locations and designations, resource numbers, and assignments.

The morning operational briefing for the forces on the east side of the fire was conducted at Jiggs about 6:00 a.m. No announcement was made prior to commencing the briefing and some line personnel missed all or part of it. The investigation team received conflicting statements on the length and content of that morning's briefing. Because of the shortage of IAPs, some line personnel did not read the weather and fire behavior forecast for the day.

Vanskike and Huter gave the branch directors responsibility for making the operational assignments and tactical decisions. Vanskike and Huter did not make an operational plan for August 9, 1999, and were not supervising operations on the branch at the time of the entrapment.

Vanskike, Hurt and Luff failed to ensure that adequate instructions were given and that critical information was available to all the people that needed it.

Other

Air medical transport to the ICP and ambulance transport to Elko was quickly arranged for two of the injured crew members. The rest of the crew followed by a combination of air and ground transportation. A Critical Incident Stress Debriefing Team (CISD) was ordered. Notification by Storey to the NDF and BLM Agency Administrators and fire staff took around four hours.

Control Mechanisms

Span of Control

Numerous resources arrived on division Q throughout the day, some of whom had not been given an assignment or briefing. Some checked in with Shepard, some with Huter, and some did not check in with any overhead. When the entrapment occurred, there were far too many resources for one division supervisor to track or utilize. Shepard reported being overwhelmed trying to locate, track, and make assignments for all the resources on the division. Shepard's unit log for division Q on August 9, 1999, shows 14 engines, two water tenders, three handcrews, four dozers, five dozer bosses, two other division supervisors, one division supervisor trainee, one field observer, and one safety officer.

Vanskike and Hurt told the investigation team that during the first shift on a fire it is their practice to send whatever resources they found unassigned in camp out to the line. This contributed to the overwhelming workload experienced by Shepard.

Radio Communications

At the time of the entrapment, there were two burnout operations and one backfire operation being conducted on the same tactical frequency. The tactical channel was grossly overloaded and the command channel was clogged with logistics traffic. In the minutes before being overrun, Horton did not hear repeated radio calls directing the squad to move to a safety zone. This was due in part to heavy radio traffic.

Ongoing Evaluations

On August 9, 1999, on Branch II, there was confusion throughout the shift over division locations, division assignments, and chain of command. Operational coordination between Branch II and division Q was poor. Vanskike and Hurt were not supervising operations on Branch II. Command and control was compromised on this part of the fire.

The two hotshot crews, Dalton and Smokey Bear, recognized the hazard inherent in backfiring the north dozer line and insisted on securing the east flank of the fire before they would proceed with the backfire.

During the backfiring operation, the fire forced the firing crew to move so fast that it could not bring the black with them to use as a safety area. This should have been a warning that the operation was becoming dangerous.

Fire Orders, Watch Out Situations and LCES

All of the 10 Standard Firefighting Orders and 13 of the 18 Watch Out Situations were compromised. See the accompanying section on Standards.

Lookouts, communication, escape routes, and safety zones (LCES) were inadequately addressed prior to lighting. Though there were several miscellaneous overhead in the area, none participated completely with the backfire and none were clearly designated to serve as lookouts. The safety areas were too far apart for the burning conditions. The overloaded tactical radio frequency made communication difficult.

Involved Personnel

Training, Qualifications and Physical Fitness

Huter has not been certified to National Wildfire Coordinating Group standards to perform the position of operations branch director.

Though it was not a direct cause of the entrapment, the physical fitness level of some members of the GNP3 crew was questionable. Horton elected to leave 15 people in a safety zone during the firing operation, which diminished the firing squad's capability.

Experience Levels

Overall, there was a notable lack of experience on the GNP3 crew, especially for the backfiring assignment. Horton had been working for the National Park Service for only three months and had not previously served as a crew boss for an NPS Type II crew. Of the 20 crew members, 17 were qualified only as firefighter (FFT2), and only three were qualified as squad boss (FFT1). It was the first wildland fire for at least five of the crew members. No one on the crew was highly experienced, and Horton was only moderately experienced. A number of the GNP3

crew members did not have a realistic idea of what would be encountered or expected on fire assignments.

Some of the GNP3 crew members believed that their prescribed fire experience equated to fire suppression experience. This is not the case, as demonstrated when one of the entrapped crew members wasted precious time trying to extinguish a drip torch as the fire was overrunning the firing squad.

The lack of experience and fitness made the GNP3 crew vulnerable to an accident. Horton over-represented his crew's experience to Huter and Shepard, who in turn gave the crew a difficult and hazardous assignment. Few of the crew members recognized the hazards facing them, and lack of experience contributed to mistakes and panic.

Operational Period Length/Fatigue

This was not a contributing factor at the time of the entrapment.

Attitudes

There was a driving sense of urgency on the part of Huter and Shepard to complete the backfire before the dozer line was lost. Several key factors were overlooked or ignored in the rush to complete the line:

- The GNP3 crew was not highly experienced.
- The fire had been exhibiting extreme behavior, the weather was worsening, and the backfiring operation took place at the height of burning conditions during a red flag warning.
- The dozer line was unsecured on the east.
- The terrain and fuels farther to the north of the dozer line were more conducive to fighting the fire. As it turned out, after the fire overran the dozer line, it was flanked and pinched off in the evening at least two miles from the closest structures in the Lucky Nugget subdivision.
- There was inadequate support (lookouts, engines, and aviation) for the firing squad.

- No one involved with the backfire could directly see the main fire until just before the entrapment.

Huter displayed minimal concern for the firing squad's well being. Immediately after the entrapment, he had them provide for their own medical care and transportation to the helispot, while he saw to the completion of the firing.

Vanskike and Hurt did not give appropriate consideration to planning or oversight for line operations given the extreme conditions forecast for the day. They instructed the Branch Directors to develop the plan for the shift, and did not oversee fireline operations on Branch II at a critical time.

Sessions did not instigate an effective inquiry into the entrapment, overlooked the extent of the injuries, and downplayed the incident in his report and to the investigation team.

Storey approved and Luff issued, an inadequate and incomplete IAP.

In summary, several key members of the IMT did not have an adequate concern for the existing conditions, which was a contributing factor in the entrapment.

Leadership

Horton made a number of mistakes:

- He told Shepard and Huter that his crew had "lots of burning experience," yet he left 15 crew members in a safety zone during the firing operation because of their lack of experience and training and low fitness level. He overestimated the capabilities of his crew, and over-represented the crew's capabilities to the fireline overhead.

- He became so engrossed in the firing operation that he compromised several basic safety procedures. He did not provide for the safety of his crew, had no communication with lookouts, and was unaware of the location of the main fire until just before the entrapment. He should have been monitoring radio traffic, weather, and fire behavior, rather than actively participating in lighting.

- He disregarded the conditions the firing squad encountered during the firing operation, which made the available safety zones inadequate.

Horton needs a better understanding of the role and responsibilities of the crew boss position before he takes another crew out.

The experience and capabilities of the GNP3 crew were not consistent with the assignment it was given by Huter and Shepard. Horton did not accurately communicate the crew's level of experience to Shepard or Huter. Neither Shepard nor Huter did an accurate job of assessing the capabilities and experience of the GNP3 crew.

Immediately after the entrapment, Huter turned over responsibility for assessment and first aid to one of the injured crew members and returned to firing the control line. The crew member was later admitted to the Elko hospital and remained overnight. Immediately after this incident, the crew member was not physically or mentally ready to take responsibility for others.

Sessions overlooked the extent of the injuries, did a cursory follow up at the hospital, and did not instigate an investigation. There was little documentation in the final fire package dealing with his role in the incident.

Shepard made a substantial effort to assist and comfort the GNP3 crew after the entrapment. He met with the crew in town that night to give what help he could. Late the night of the entrapment, he felt deeply concerned over the event, and contacted the IMT to tell them that he wanted to stay in town the next day to assist with the critical incident stress debriefing. Luff, Vanskike, Hurt, and Storey contacted him and told him to report to the line the next day. This indicates a lack of concern on the part of the IMT.

Equipment

Availability

The GNP3 crew members had Nomex shrouds attached to their hardhats. The shrouds were not in use at the time of the entrapment. Use of the shrouds would have probably prevented most of the burns incurred by crew members.

Performance

At least two GNP3 crew members had difficulty removing their fire shelters from their packs as they ran. One crew member broke the red ring off the vinyl fire shelter case while trying to open it. The design of the field pack fire shelter pocket and the vinyl case both contributed to the difficulty crew members had deploying shelters.

The bus used to mobilize the crew had numerous mechanical problems, culminating in a breakdown less than a mile from the fireline on the day of the entrapment. The crew told the investigation team that the driver mentioned he had problems seeing at night, yet he drove through the night from California to Nevada during the mobilization. After driving all night, the driver worked through the next day driving the crew to its fireline assignment.

Management Support

The mobilization procedures followed by the NPS Pacific West Region for this Type 2 crew contributed to problems with crew cohesion, communication, chain of command, and overall level of experience. On this assignment, 21 firefighters from eight different park units were assembled at Golden Gate NRA and dispatched to Nevada. This resulted in a situation where inexperienced personnel from several parks were led by a moderately experienced crew boss. Several of the GNP3 crew had no wildland fire experience or only some prescribed fire experience.

Additionally, some of the personnel on the GNP3 crew were marginally fit, the crew boss trainee, Naar, did not work well with Horton, and Horton's expectation of the crew's capabilities was unrealistic. These factors all compromised the safety and performance of the crew.

Glossary

Backfire: A fire set along the inner edge of a fireline to consume the fuel in the path of a wildfire and/or change the direction of force of the fire's convection column.

Burn Out: Setting fire inside a control line to consume fuel between the edge of the fire and the control line.

Burning Conditions: The state of the combined factors of the environment that affect fire behavior in a specified fuel type.

Complex: Two or more individual incidents located in the same general area which are assigned to a single incident commander or unified command.

Contain a fire: A fuel break around the fire has been completed. This break may include natural barriers or manually and/or mechanically constructed line.

Control a fire: The complete extinguishment of a fire, including spot fires. Fireline has been strengthened so that flare-ups from within the perimeter of the fire will not break through this line.

Control Line: All built or natural fire barriers and treated fire edge used to control a fire.

Crew: An organized group of firefighters under the leadership of a crew leader or other designated official.

Crew Boss: A person in supervisory charge of usually 16 to 21 firefighters and responsible for their performance, safety, and welfare.

Division: Divisions are used to divide an incident into geographical areas of operation. Divisions are established when the number of resources exceeds the span-of-control of the operations chief. A division is located within the ICS organization between the branch and the task force/strike team.

Dozer: Any tracked vehicle with a front mounted blade used for exposing mineral soil.

Dozer Line: Fireline constructed by the front blade of a dozer.

Glossary

Drip Torch: Hand-held device for igniting fires by dripping flaming liquid fuel on the materials to be burned; consists of a fuel fount, burner arm, and igniter. Fuel used is generally a mixture of diesel and gasoline.

Engine: Any ground vehicle providing specified levels of pumping, water and hose capacity.

Entrapment: A situation where personnel are unexpectedly caught in a fire behavior-related, life-threatening position where planned escape routes or safety zones are absent, inadequate, or compromised. An entrapment may or may not include deployment of a fire shelter for its intended purpose. These situations may or may not result in injury. They include "near misses."

Field Observer: Person responsible to the Situation Unit Leader for collecting and reporting information about an incident obtained from personal observations and interviews.

Fire Behavior: The manner in which a fire reacts to the influences of fuel, weather and topography.

Fire Cache: A supply of fire tools and equipment assembled in planned quantities or standard units at a strategic point for exclusive use in fire suppression.

Fire Shelter: An aluminized tent offering protection by means of reflecting radiant heat and providing a volume of breathable air in a fire entrapment situation. Fire shelters should only be used in life threatening situations, as a last resort.

Fire Shelter Deployment: The removing of a fire shelter from its case and using it as protection against fire.

Fire Whirl: Spinning vortex column of ascending hot air and gases rising from a fire and carrying aloft smoke, debris, and flame. Fire whirls range in size from less than one foot to over 500 feet in diameter. Large fire whirls have the intensity of a small tornado.

Firefighting Resources: All people and major items of equipment that can or potentially could be assigned to fires.

Fireline: A linear fire barrier that is scraped or dug to mineral soil.

Fuel Model: Simulated fuel complex (or combination of vegetation types) for which all fuel descriptors required for the solution of a mathematical rate of spread model have been specified.

Fuel Moisture (Fuel Moisture Content): The quantity of moisture in fuel expressed as a percentage of the weight when thoroughly dried at 212 degrees Fahrenheit.

Fuel Type: An identifiable association of fuel elements of distinctive plant species, form, size, arrangement, or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions.

Haines Index: An atmospheric index used to indicate the potential for wildfire growth by measuring the stability and dryness of the air over a fire.

Hand Line: A fireline built with hand tools.

Hotshot Crew: A highly trained fire crew used mainly to build fireline by hand.

Incident: A human-caused or natural occurrence, such as wildland fire, that requires emergency service action to prevent or reduce the loss of life or damage to property or natural resources.

Incident Command Post (ICP): Location at which primary command functions are executed. The ICP may be collocated with the incident base or other incident facilities.

Incident Commander: Individual responsible for the management of all incident operations at the incident site.

Incident Management Team: The incident commander and appropriate general and command staff personnel assigned to manage an incident.

Initial Attack: The actions taken by the first resources to arrive at a wildfire to protect lives and property, and prevent further extension of the fire.

Operations Branch Director: Person under the direction of the operations section chief who is responsible for implementing that portion of the incident action plan appropriate to the branch.

Glossary

Personnel Protective Equipment (PPE): All firefighting personnel must be equipped with proper equipment and clothing in order to mitigate the risk of injury from, or exposure to, hazardous conditions encountered while working. PPE includes, but is not limited to: 8-inch high laced leather boots with lug soles, fire shelter, hard hat with chin strap, goggles, ear plugs, aramid shirts and trousers, leather gloves and individual first aid kits.

Rate of Spread: The relative activity of a fire in extending its horizontal dimensions. It is expressed as rate of increase of the total perimeter of the fire, as rate of forward spread of the fire
front, or as rate of increase in area, depending on the intended use of the information. Usually it is expressed in chains or acres per hour for a specific period in the fire's history.

Red Flag Warning: Term used by fire weather forecasters to alert forecast users to an ongoing or imminent critical fire weather pattern.

Relative Humidity (RH): The ratio of the amount of moisture in the air, to the maximum amount of moisture that air would contain if it were saturated. The ratio of the actual vapor pressure to the saturated vapor pressure.

Remote Automatic Weather Station (RAWS): An apparatus that automatically acquires, processes, and stores local weather data for later transmission to the GOES Satellite, from which the data is retransmitted to an earth receiving station for use in the National Fire Danger Rating System.

Safety Zone: An area cleared of flammable materials used for escape in the event the line is outflanked or in case a spot fire causes fuels outside the control line to render the line unsafe. In firing operations, crews progress so as to maintain a safety zone close at hand allowing the fuels
inside the control line to be consumed before going ahead. Safety zones may also be constructed as integral parts of fuelbreaks; they are greatly enlarged areas which can be used with relative safety by firefighters and their equipment in the event of blowup in the vicinity.

Serious Accident Investigation: A Department of the Interior serious accident is an accident involving a death and/or three or more persons hospitalized and/or department property lost in excess of $250,000.

Glossary

Slop-over: A fire edge that crosses a control line or natural barrier intended to contain the fire.

Spot Fire: A fire ignited outside the perimeter of the main fire by flying sparks or embers.

Spot Weather Forecast: A special forecast issued to fit the time, topography, and weather of each specific fire. These forecasts are issued upon request of the user agency and are more detailed, timely, and specific than zone forecasts.

Spotting: Behavior of a fire producing sparks or embers that are carried by the wind and start new fires beyond the zone of direct ignition by the main fire.

Suppression: All the work of extinguishing or containing a fire, beginning with its discovery.

Wildland Fire: Any nonstructure fire, other than prescribed fire, that occurs in the wildland.

SADLER COMPLEX

INCIDENT ACTION PLAN

DAY OPERATIONAL PERIOD

AUGUST 9, 1999

Incident Action Plan

INCIDENT OBJECTIVES	1. Incident Name: Sadler Complex	2. Date Prepared: 08/8/1999	3. Time Prepared: 2155

4. Operational Period: 8/9/1999 0600-2000

5. General Control Objectives for the Incident (include alternatives)

1. Firefighter and public safety.
2. Protection of structures.
3. Suppression of the Fire in the most cost effective manner.
4. Protection of historic cultural sites.
5. Protect archeological sites in Aiken Canyon and Mineral Hill.
6. Protect livestock.

6. Weather Forecast for Period

see attached

7. General Safety Message

see attached

8. Attachments (mark if attached)

	Organization List - ICS 203	x	Medical Plan - ICS 206	x	(Other)
	Division Assignment Lists - ICS 204	x	Incident Map		
	Communications Plan - ICS 205	x	Traffic Plan		

9. Prepared by (Planning Section Chief)	10. Approved by (Incident Commander)
Jeff Luff	Ed Storey

Incident Action Plan

ORGANIZATION ASSIGNMENT LIST

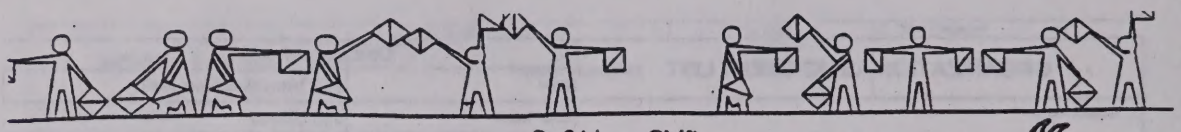
1. Incident Name	Sadler Complex
2. Date	8/08/99
3. Time	2000
4. Operational Period	8/09/99 0700 - 2100

Position	Name
5. Incident Commander and Staff	
Incident Commander	Ed Storey
Deputy	
Safety Officer	Dee Sessions
Information Officer	Susan Haywood
Liaison Officer	
6. Agency Representative	
Agency	Name
BLM	Danielle Smith
7. Planning Section	
Chief	Jeff Luff
Deputy	
Resources Unit	Lengerich/Ogle/Percy
Situation Unit	
Documentation Unit	
Demobilization Unit	
Technical Specialists	
Human Resources	
Training	
Fire Behavior Analyst	Rich McCrea
FBAN Trainee	Chuck Mark
Resource Advisor	Bill Lutjens
8. Logistics Section	
Chief	Butch Hayes/Bob Hurley
Deputy	
Supply Unit	Kaye Olpin/Ken Shurtz/Paul Buhler
Facilities Unit	Bart Koonce/Lee Hughes
Ground Support Unit	Scott Kidd/Jeff Tanasse
Communications Unit	Royce Shearing
Medical Unit	
Security Unit	Larry Benham
Food Unit	Gary Reynolds

9. Operations Section		
Chief	Buz Vanskike/Skip Hurt	
Chief Trainee	Jim Urresti	
a. Branch I - Division/Groups		
Branch Director		
Deputy		
Division/Group	A,B,C	Nemore/Davenport
Division/Group	J	Johnson//Ford
Division/Group	K	Johnson/Reisher
Division/Group	L	Clark/Pacheco/Johnson
Division/Group	M	Fred Schoeffler
b. Branch II - Division/Groups		
Branch Director		
Deputy		
Division/Group	N	Chuck Frank
Division/Group	O	Tom Shepard
Division/Group	Q	Mike Head
Division/Group	R	John Hansen
Division/Group	S	Jerry George
c. Branch III - Division/Groups		
Branch Director		
Deputy		
Division/Group		
Division/Group		
Division/Group		
Division/Group		
Division/Group		
d. Air Operations Branch		
Air Operations Branch Director	Larry Mabbutt	
Air Attack Supervisor	Tubin/Pearson/Peterson	
Air Support Supervisor	Jeff Gardetto	
Helicoptar Coordinator		
Air Tankar Coordinator		
10. Finance Section		
Chief	Loren Walker	
Deputy		
Tme Unit	Peggy Jacobson	
Procurment Unit	Linda Spitzler	
Compensation/Claims Unit	Beth Sjoblom	
Cost Unit		

Prepared by (Resource Unit Leader)

Incident Action Plan



DAY Shift
8/9/99 Date

Safety Message

(1) DURING THE MIDDLE AGES, PROBABLY ONE OF THE BIGGEST MISTAKES WAS NOT PUTTING ON YOUR ARMOR BECAUSE YOU WERE 'JUST GOING DOWN TO THE CORNER' HEADLIGHTS, SEAT BELTS – PPE ALWAYS

(2) DON'T CHANGE THE RULES BY BREAKING THEM. LOOK, LEARN, REMEMBER THE STANDARD ORDERS AND SITUATIONS THAT SHOUT "WATCH-OUT"

(3) WATER. NOW IS THE TIME TO CAMEL UP. PUSH FOR 2 GALLONS A DAY. 2 QTS OF GATOR AID CAN REPLACE 2 QTS OF WATER.

(4) PLEASE REPORT ALL SAFETY HAZARDS TO OPERATIONS SECTION CHIEF OR TO YOUR FRIENDLY SAFETY OFFICER.

(5) FIRE HAS LARGE POTENTIAL FOR RAPID SPREAD. KNOW YOUR SAFETY ZONES AND ESCAPE ROUTES AND KEEP ALERT.

(6) SHARE A SAFETY & STRATEGY MESSAGE WITH YOUR CREW

Standard Order

FIGHT FIRE AGGRESSIVELY BUT PROVIDE FOR SAFETY FIRST.

Thought For The Day

WHY ARE THERE FLOTATION DEVICES UNDER PLANE SEATS INSTEAD OF PARACHUTES?

DEE SESSIONS
SOFRI

Incident Action Plan

MEDICAL PLAN	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED	4. OPERATIONAL PERIOD
	SADLER COMPLEX	8/8/99	1300	0600 - 2400

5. INCIDENT MEDICAL AID STATIONS

MEDICAL AID STATIONS	LOCATION	PARAMEDICS YES	PARAMEDICS NO
RAND RANCH	ICP		

6. TRANSPORTATION

A. AMBULANCE SERVICES

NAME	ADDRESS	PHONE	PARAMEDICS YES	PARAMEDICS NO
EUREKA COUNTY		237-5330		X
ELKO COUNTY	569 COURT, ELKO	738-5382		

B. INCIDENT AMBULANCES

NAME	LOCATION	PARAMEDICS YES	PARAMEDICS NO
EUREKA COUNTY	ICP		X
LIFE FLIGHT 1-800 SLC 321-1911	TX 466.075 RX 461.075, TONE 173.8	X	
AIR MED 1-800 SLC 453-0170	ADJACENT TO U OF U (123.050)	X	

7. HOSPITALS

NAME	ADDRESS	TRAVEL TIME AIR	TRAVEL TIME GRND	PHONE	HELIPAD YES	HELIPAD NO	BURN CENTER YES	BURN CENTER NO
ELKO GENERAL	1297 COLLEGE, ELKO	10 MIN	60 MIN	738-5151		X		X
	40.50.0 115 50.0							
UNIVERSITY OF UTAH	SALT LAKE CITY, UTAH	1 HR	4 HR	1-800 581-2700	X		X	
	40 49.5 111 50.1							

8. MEDICAL EMERGENCY PROCEDURES

INJURIES ARE TO BE REPORTED BY CREW BOSS TO DIV/GROUP SUP WHO WILL NOTIFY MEDICAL UNIT LDR. TRANSPORT WILL BE DETERMINED BY PATIENT CONDITION. INITIAL REPORT SHOULD INCLUDE: PATIENT AGE, SEX, INJURY, LEVEL OF CONSCIOUSNESS, LOCATION & MEDICAL HELP AVAILABLE ON SCENE. "MEDIVAC" IS FOR LIFE-THREATENING INJURIES ONLY. "MEDICAL INJURY TRANSPORT" WILL BE USED FOR OTHER INJURIES.

206 ICS 8/78	9. PREPARED BY (MEDICAL UNIT LEADER)	10. REVIEWED BY (SAFETY OFFICER)
	SESSIONS	D. [illegible] C. FRI

ATTN: FBA's

SPOT FORECAST FOR THE SADLER COMPLEX & ALL OTHER NEARBY FIRES IN ELKO AND EUREKA COUNTIES

FOR THE DAY SHIFT MONDAY AUGUST 09, 1999

*** DRY WITH INCREASING SOUTH WINDS TODAY ***

DISCUSSION...HUMIDITIES IN THE SINGLE DIGITS...A HAINES INDEX OF 6 AND GUSTY SOUTHERLY WINDS WILL CAUSE MORE EXTREME FIRE BEHAVIOR TODAY. DUST (OR ASH) DEVILS AND FIREWHIRLS WILL OCCUR AGAIN. SOUTHERLY WINDS ARE INCREASING OUT AHEAD OF AN APPROACHING STORM SYSTEM. BEFORE THAT STORM ARRIVES...AN UPPER LEVEL DISTURBANCE WILL MOVE OVER OUR AREA. THERE IS A GOOD CHANCE OF THUNDERSTORMS DEVELOPING TUESDAY AFTERNOON. ANY STORMS THAT DO DEVELOP WILL BE CAPABLE OF PRODUCING MICROBURST WINDS (IN EXCESS OF 50 MPH) AND SOME DRY LIGHTNING STARTS. A COLD FRONT (WITH A STRONG WIND SHIFT) WILL THEN MOVE THROUGH OUR AREA TUESDAY EVENING. THIS FRONT SHOULD SPREAD A MOIST AND COOLER AIRMASS ACROSS NEVADA. THERE WILL BE A CHANCE FOR WET STORMS OR JUST FLAT OUT RAIN TO DEVELOP ALONG AND BEHIND THIS FRONT TUESDAY EVENING INTO WEDNESDAY. IF THIS STRONG COLD FRONT MOVES THROUGH AS IT LOOKS RIGHT NOW...TEMPERATURES WILL COOL ABOUT 10 DEGREES AND HUMIDITIES WILL INCREASE SIGNIFICANTLY WEDNESDAY.

TODAY

- SKY/WEATHER...DRY WITH GUSTY AFTERNOON SOUTH WINDS DEVELOPING. BECOMING PARTLY CLOUDY WITH A SLIGHT CHANCE OF DRY THUNDERSTORMS LATE IN THE DAY. VALLEY INVERSIONS NEAR 3000 FEET ABOVE GROUND LEVEL MIXING OUT AROUND 1000 PDT.
- HAINES INDEX..6
- LAL.....SLIGHT CHANCE OF 2 LATE
- MAX TEMP.....85-91°F
- MIN RH.....6-12%
- EYE-LEVEL WINDS...
  - SLOPE/VALLEY...BECOMING SOUTH 10-20 MPH WITH GUSTS 20-30 MPH.
  - RIDGETOPS.....BECOMING SOUTH 20-30 MPH WITH GUSTS 30-40 MPH.

TONIGHT

- SKY/WEATHER...PARTLY CLOUDY WITH A SLIGHT CHANCE OF DRY THUNDERSTORMS. INVERSIONS WILL BE SHALLOW BUT WILL DEVELOP UP TO ABOUT 1500 FEET ABOVE GROUND LEVEL. A THERMAL BELT IS LIKELY. ACTIVE BURNING IS POSSIBLE ALL NIGHT FROM ABOUT 7000 FEET ASL UP.
- HAINES INDEX..4
- LAL.....SLIGHT CHANCE OF 2
- MIN TEMP.....45-50°F
- MAX RH.....25-35%
- EYE-LEVEL WINDS...
  - SLOPE/VALLEY...BECOMING SOUTH-SOUTHEAST 5-15 MPH AFTER SUNSET
  - RIDGETOPS.....SOUTH-SOUTHEAST 15-30 MPH

TUESDAY

- SKY/WEATHER...WINDY. STRONG AND GUSTY SOUTH-SOUTHWEST WINDS. BECOMING MOSTLY CLOUDY WITH A GOOD CHANCE OF DRY THUNDERSTORMS. MICROBURST WINDS AND DRY LIGHTNING ARE POSSIBLE. INVERSIONS MIXING OUT SHORTLY AFTER 0900 PDT. GUSTY WINDS SHIFTING TO THE NORTHWEST IN THE EVENING DUE TO A COLD FRONT.
- HAINES INDEX..6 EARLY...4 LATE
- LAL.....2-3 EXPECTED...BUT A CHANCE OF 6
- MAX TEMP.....83-89°F
- MIN RH.....10-18% (EARLY AFTERNOON)
- EYE-LEVEL WINDS...
  - SLOPE/VALLEY...BECOMING SOUTH-SOUTHWEST 20-30 MPH WITH GUSTS 30-40 MPH.
  - RIDGETOPS.....BECOMING SOUTH-SOUTHWEST 30-40 MPH WITH GUSTS 40-50 MPH.

(EXTENDED FORECAST OMITTED DUE TO THE SIGNIFICANCE OF OUR WEATHER THE NEXT 2 DAYS)

CHRIS MAIER...IMET/SALT LAKE CITY, UT (ISSUED AT 1800 PDT SUNDAY, AUG 08 1999)

FIRE BEHAVIOR PREDICTION

Prediction No. ___3___

FIRE NAME: Sadler Complex **PREDICTION FOR__DAY___SHIFT**

SHIFT DATE: 8/9/99 **TIME/DATE OF ISSUE: 2210 8/8**

FIRE BEHAVIOR ANALYST: Rod Dykehouse
ROD DYKEHOUSE

FIRE BEHAVIOR

GENERAL:

HUMIDITIES IN SINGLE DIGITS, GUSTING SOUTHERLY WINDS AND A HAINES INDEX OF 6 INDICATING UNSTABLE AIR OVER THE FIRE AREA. THIS WILL CAUSE MORE EXTREME FIRE BEHAVIOR TODAY. HIGHER RATES OF SPREADS CAN BE EXPECTED TODAY ESPECIALLY WHERE THERE IS A HIGHER FUEL LOADING OF FINE FUELS. FINE FUEL MOISTURES COULD BE DOWN TO 3% TODAY AS THE TEMPS WILL BE UP 5-10° TODAY WITH RH'S DOWN TO 6%. WE CAN EXPECT FLAME LENGTHS OF 50-100 FEET IN THE PINION/JUNIPER AND UP TO 20 FEET IN THE SAGE/GRASS.

SPECIFIC:

PINE AND HORSE FIRES

FIRES WERE CONTAINED AS OF 2000 ON 8/8. MAIN CONCERN IS THE TRAIL CANYON FIRE THAT BURNED INTO THE SOUTH END OF HORSE FIRE YESTERDAY. SOUTHERLY WINDS COULD PUSH THIS FIRE INTO THE PINE FIRE TODAY. NEED TO BE HEADS UP WHEN ASSIGNED TO THESE FIRES.

SADLER AND TABLE MTN FIRES

EXPECT HOTSPOTS ALONG ALL SECTIONS OF THE FIRE PERIMETER. TORCHING OF JUNIPERS CAN CAUSE SPOTTING ACROSS CONTROL LINES. THIS FIRE EXPERIENCED ACTIVE FIRE BEHAVIOR ALONG MOST OF THE PERIMETER YESTERDAY WITH WINDS SHIFTING FROM THE SOUTHEAST TO SOUTHWEST. FIRE WAS BACKING THROUGH THE PINION/JUNIPER, SAGE/GRASS AGAINST THE WIND ALONG THE SOUTH PERIMETER OF THE SADLER FIRE.

SAFETY CONCERNS

EXTREME WEATHER CONDITIONS EXIST FOR HIGH RATES OF SPREAD TODAY !!!!!! REMEMBER L C E S !!!!!!!!

FIRES THAT RUN UPHILL FAST IN DRAINAGES , CHIMNEYS, GULCHES AND STEEP SLOPES.

INCIDENT RADIO COMMUNICATIONS PLAN	1. Incident Name Sadler Complex	2. Date/Time Prepared 8/8/99	3. Operational Period Date/Time 8/9/99 0700-2100

4. Basic Radio Channel Utilization

Radio Type/Cache	Channel	Function	Frequency/Tone	Assignment	Remarks
King NIFC	1	Command for Sadler	Tx 168.725 Rx 166.5625	Command + All Divisions	
King NIFC	2	Tactical	168.050 Simplex	Divisions A+B+C Horse +Pine Fire	
King NIFC	3	Tactical	168.200 Simplex	Division R+S	
King NIFC	4	Tactical	168.700 Simplex	Division J+K+L	
King NIFC	5	Tactical	168.100 Simplex	Division M+N+O+Q	
King NIFC	6	Air to Ground	164.150 Simplex	All Divisions	
King NIFC	7	Command Rpt	Tx 170.975 Rx 168.700	Horse + Pine, Div A,B,C Alternate for J	
King NIFC	14	Air Guard	168.625 Simplex	Ground to Air Emergency Only	
King NIFC					
King NIFC					

5. Prepared by (Communications Unit)
Al Burnett

AIR OPERATIONS SUMMARY

1. INCIDENT NAME: SADDLER

2. OPERATIONAL PERIOD (Date & Time): 8/9/99 1845 hrs

3. DISTRIBUTION
HELIBASES 9
FIXED WING BASES 3

4. PERSONNEL AND COMMUNICATIONS

	NAME	AIR/AIR FREQUENCY	AIR/GROUND FREQUENCY
AIR OPERATIONS DIRECTOR	LARRY MABBUT		
AIR SUPPORT	JEFF CARDETTO		
AIR ATTACK SUPERVISOR			
HELICOPTER COORDINATOR			
AIR TANKER COORDINATOR			
HELIBASE MGR	KY KINKADE		
HELIBASE MGR(T)	DOUG GIBBS		

5. REMARKS (Spec. Instructions, Safety Notes, Hazards, Priorities)
1 Medium on order. Upon it's arrival 85A is supposed to return to Elko for IA

6. LOCATION/ FUNCTION	7. ASSIGNMENT	8. FIXED WING NO.	8. FIXED WING TYPE	9. HELICOPTERS NO.	9. HELICOPTERS TYPE	10. TIME AVAILABLE	10. TIME COMMENCE	11. AIRCRAFT ASSIGNED	12. OPERATING BASE
SADDLER HELIBASE	BUCKETS			1	II Bell 212	0700	0730	24V	
"	DISTRICT I.A. Large fire support: buckets, recons			1	III (206 L-III)	0700	0730	85A	
"	Recons, buckets			1	III (206 B III)	0700	0730	698	
ELKO AIRPORT	Buckets			1	I (BV 107)	0700	0730	826	
"	Water Drops/Retardant	3	SEAT.			0800	0800		
	13. TOTALS	3		4					

14. AIR OPERATIONS SUPPORT EQUIPMENT

15. PREPARED BY (Include Date & Time)

220 ICS 3-82

Incident Action Plan

DIVISION ASSIGNMENT LIST	1. Branch	2. Division/Group A,B,C - Horse/Pine Fire
3. Incident Name: Sadler Complex	4. Operational Period Date: 08/09/99	Time: 0730 - 2000

5. Operations Personnel

Operations Chief	Skip Hurt/Buzz Van Skike	Division/Group Supervisor	Nemore/Davenport
Branch Director		Air Attack Supervisor No.	Pearson/Tubin/Peterson

6. Resources Assigned this Period

Strike Team/Task Force/ Resource Designator	Leader	Number Persons	Trans. Needed	Drop Off PT./Time	Pick Up PT./Time
Crew					
Roche #2					
Engine					
BLM 1945					
READ	Steve Bell	1			

7. Control Operations

Will be announced at briefing.

8. Special Instructions

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command	TX 168.725 RX 166.5625	King NIFC	Ch 1	Logistics		King NIFC	
Tactical Div/Group	168.350 168.200	King NIFC	CH 2 CH 3	Air to Ground	164.150	King NIFC	CH-6

Prepared by (Resource Unit Ldr.)	Approved by (Planning Sect. Ch.)	Date	Time
Ross Catron/Madonna Lengerich	Dan Washington/Jeff Luff	08/08/1999	2200

Incident Action Plan

DIVISION ASSIGNMENT LIST	1. Branch	2. Division/Group J - Sadler Fire
3. Incident Name Sadler Complex	4. Operational Period Date: 08/09/1999	Time: 0730 - 2000

5. Operations Personnel

Operations Chief	Skip Hurt/Buzz Van Skike	Division/Group Supervisor	Kevin JohnsonMike Ford (t)
Branch Director		Air Attack Supervisor No.	Pearson/Tubin/Peterson

6. Resources Assigned this Period

Strike Team/Task Force/ Resource Designator	Leader	Number Persons	Trans. Needed	Drop Off PT./Time	Pick Up PT./Time
SRV 27	Berry Hogge	20	No		
SRV 17	Nino Bear	19	No		
SRV 39	Barb Raible	20	No		
Flame-n-Goes		20	No		
Eng 501/604	Winter/Phillips	3/3			
Eng. 606/1126	Strohmeyer/Long	3/3			
E-PineValley 62		3	No		
Eng. 55		3			
WT. 3192	Stamps	1			
BLM Dozer		1			

7. Control Operations

Will be announced at briefing.

FOBS: Barry Fortus
DOZB: William McDermont
SOF2: Dan Nichol

8. Special Instructions

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command		King NIFC		Logistics		King NIFC	
Tactical DivGroup	168.350	King NIFC		Air to Ground	170.225	King NIFC	

Prepared by (Resource Unit Ldr.)	Approved by (Planning Sect. Ch.)	Date	Time
Ross Catron/Madonna Lengerich	Dan Washington/Jeff Luff	08/08/1999	2200

Incident Action Plan

DIVISION ASSIGNMENT LIST	1. Branch	2. Division/Group K4- Sadler Fire
3. Incident Name: Sadler Complex	4. Operational Period Date: 08/09/99	Time: 0730 - 2000

5. Operations Personnel

Operations Chief	Skip Hurt/BuzzVan Skike	Division/Group Supervisor	Kevin Johnson –
Branch Director		Air Attack Supervisor No.	Pearson/Tubin/Peterson

6. Resources Assigned this Period

Strike Team/Task Force/ Resource Designator	Leader	Number Persons	Trans. Needed	Drop Off PT./Time	Pick Up PT./Time
DIVS	Dave Reisher	1			
STEN	Steve Haines				
Eng. 73	Savage	3			
Eng. 61	Vanis	3			
Eng. 12	Begay	3			
Ruby Dome Dozer					

7. Control Operations

Will be announced at briefing.

8. Special Instructions

Remember L.C.E.S.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command		King NIFC		Logistics		King NIFC	
Tactical DivGroup	168.350	King NIFC		Air to Ground	170.225	King NIFC	

Prepared by (Resource Unit Ldr.)	Approved by (Planning Sect. Ch.)	Date	Time
Ross Catron/Madonna Lengerich	Dan Washington/Jeff Luff	08/08/1999	2000

DIVISION ASSIGNMENT LIST	1. Branch	2. Division/Group L - Sadler Fire
3. Incident Name: Sadler Complex	4. Operational Period Date: 08/09/99	Time: 0730 - 2000

5. Operations Personnel

Operations Chief	Skip Hurt/Buzz Van Skike	Division/Group Supervisor	Clark/Pacheco/Johnson
Branch Director		Air Attack Supervisor No.	Pearson/Tubin/Peterson

6. Resources Assigned this Period

Strike Team/Task Force/ Resource Designator	Leader	Number Persons	Trans. Needed	Drop Off PT./Time	Pick Up PT./Time
San Carlos 51	Goseyun	20			
San Carlos 32	Phillips	20			
San Carlos 54	Cosen	20			
Navajo Scout's #18	Chisehilly	20			
Union	Gomez	20			
Del Rosa	Koenig	20			
Eng. 7233	Echeverria	3			
Eng. 7533	Bendzen	3			
Eng. 1946	Rodriguez	3			
STCR	Greg Toll				

7. Control Operations

To be announced at briefing.

FOBS: Andrew Schillingburg

8. Special Instructions

Remember L.C.E.S.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command		King NIFC		Logistics		King NIFC	
Tactical Div/Group	168.350	King NIFC		Air to Ground	170.225	King NIFC	

Prepared by (Resource Unit Ldr.)	Approved by (Planning Sect. Ch.)	Date	Time
Ross Catron/Madonna Lengerich	Dan Washington/Jeff Luff	08/08/1999	0100

Incident Action Plan

DIVISION ASSIGNMENT LIST	1. Branch	2. Division/Group M- Sadler Fire
3. Incident Name Sadler Complex	4. Operational Period Date: 08/09/99	Time: 0730 - 2000

5. Operations Personnel

Operations Chief	Skip Hurt/BuzzVan Skike	Division/Group Supervisor	Fred Schoeffler
Branch Director		Air Attack Supervisor No.	Pearson/Tubin/Peterson

6. Resources Assigned this Period

Strike Team/Task Force/ Resource Designator	Leader	Number Persons	Trans. Needed	Drop Off PT./Time	Pick Up PT./Time
Bear Divide	Conklin	20			
Vista Grande		20			
~~Veges~~ ST Eng	Barons				
E. Nevada	Whiterock	20			
Ore-Cal #2					
WT PV63					

7. Control Operations

Will be announced at briefing.

8. Special Instructions

Remember L.C.E.S.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command		King NIFC		Logistics		King NIFC	
Tactical Div/Group	168.350	King NIFC		Air to Ground	170.225	King NIFC	

Prepared by (Resource Unit Ldr.)	Approved by (Planning Sect. Ch.)	Date	Time
Ross Catron/Madonna Lengerich	Dan Washington/Jeff Luff	08/08/1999	2000

DIVISION ASSIGNMENT LIST	1. Branch	2. Division/Group N- Sadler Fire
3. Incident Name Sadler Complex	4. Operational Period Date: 08/09/99	Time: 0730 - 2000

5. Operations Personnel

Operations Chief	Skip Hurt/BuzzVan Skike	Division/Group Supervisor	Chuck Frank
Branch Director		Air Attack Supervisor No.	Pearson/Tubin/Peterson

6. Resources Assigned this Period

Strike Team/Task Force/ Resource Designator	Leader	Number Persons	Trans. Needed	Drop Off PT./Time	Pick Up PT./Time
Dalton HS					
Smoky Bear HS					
GNP#3					
ELY #1					
Eng. TF #3					
Dozers: Bald Mtn./High Mark/ Highman					
WT E-15					
Grader: Highmark					
DOZB	Jeff West				
DOZB	Bob Hawkins				

7. Control Operations

Will be announced at briefing.

FOBS - Bob Hawkins

8. Special Instructions

Remember L.C.E.S.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command		King NIFC		Logistics		King NIFC	
Tactical Div/Group	168.350	King NIFC		Air to Ground	170.225	King NIFC	

Prepared by (Resource Unit Ldr.)	Approved by (Planning Sect. Ch.)	Date	Time
Ross Catron/Madonna Lengerich	Dan Washington/Jeff Luff	08/08/1999	2000

Incident Action Plan

DIVISION ASSIGNMENT LIST	1. Branch	2. Division/Group
		O- Sadler Fire
3. Incident Name	4. Operational Period	
Sadler Complex	Date: 08/09/99	Time: 0730 - 2000

5. Operations Personnel

Operations Chief	Skip Hurt/BuzzVan Skike	Division/Group Supervisor	Tom Shepard
Branch Director		Air Attack Supervisor No.	Pearson/Tubin/Peterson

6. Resources Assigned this Period

Strike Team/Task Force/ Resource Designator	Leader	Number Persons	Trans. Needed	Drop Off PT./Time	Pick Up PT./Time
Eng. 5943	Taggart	3			
Eng. 89	Shupla	3			
Eng. 609	Rebitzke	3			
Eng. 309	Piscopo	3			
Eng. 240	Hutter	3			
WT 1921					
Lagarza 1 & 2					
Zaga Dozer					
DOZB	Frank Puddy				
DOZB	Mike Hetcht				
SOF2	Darroll Abeyta				

7. Control Operations

Will be announced at briefing.

READ - Tom Warren
STEN - Mike Eaton
TFLD - Boyd Lebeda
Grader - Bald Mtn.

8. Special Instructions

Remember L.C.E.S.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command		King NIFC		Logistics		King NIFC	
Tactical DN/Group	168.350	King NIFC		Air to Ground	170.225	King NIFC	

Prepared by (Resource Unit Ldr.)	Approved by (Planning Sect. Ch.)	Date	Time
Ross Catron/Madonna Lengerich	Dan Washington/Jeff Luff	08/08/1999	2000

Incident Action Plan

DIVISION ASSIGNMENT LIST	1. Branch	2. Division/Group
		Q- Sadler Fire
3. Incident Name	4. Operational Period	
Sadler Complex	Date: 08/09/99	Time: 0730 - 2000

5. Operations Personnel

Operations Chief	Skip Hurt/BuzzVan Skike	Division/Group Supervisor	Mike Head
Branch Director		Air Attack Supervisor No.	Pearson/Tubin/Peterson

6. Resources Assigned this Period

Strike Team/Task Force/ Resource Designator	Leader	Number Persons	Trans. Needed	Drop Off PT./Time	Pick Up PT./Time
Eng. 44					
Eng. 10 Mile					
Eng. 31					
Eng. 2151					
Jiggs 25/55					
WT Bald Mtn.					

7. Control Operations

Will be announced at briefing.

8. Special Instructions

Remember L.C.E.S.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command		King NIFC		Logistics		King NIFC	
Tactical Div/Group	168.350	King NIFC		Air to Ground	170.225	King NIFC	

Prepared by (Resource Unit Ldr.)	Approved by (Planning Sect. Ch.)	Date	Time
Ross Catron/Madonna Lengerich	Dan Washington/Jeff Luff	08/08/1999	2000

Incident Action Plan

DIVISION ASSIGNMENT LIST	1. Branch	2. Division/Group R- Sadler Fire
3. Incident Name Sadler Complex	4. Operational Period Date: 08/09/99	Time: 0730 - 2000

5. Operations Personnel

Operations Chief	Skip Hurt/BuzzVan Skike	Division/Group Supervisor	John Hansen
Branch Director		Air Attack Supervisor No.	Pearson/Tubin/Peterson

6. Resources Assigned this Period

Strike Team/Task Force/ Resource Designator	Leader	Number Persons	Trans. Needed	Drop Off PT./Time	Pick Up PT./Time
NDF Crews 2209/2312					
NDF Crews 2210/2215					
Eng. 1942		3			
Eng. 2152	Gill	3			
FOBS	Jeff Bradford	1			

7. Control Operations

Will be announced at briefing.

8. Special Instructions

Remember L.C.E.S.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command		King NIFC		Logistics		King NIFC	
Tactical Div/Group	168.350	King NIFC		Air to Ground	170.225	King NIFC	

Prepared by (Resource Unit Ldr.)	Approved by (Planning Sect. Ch.)	Date	Time
Ross Catron/Madonna Lengerich	Dan Washington/Jeff Luff	08/08/1999	2000

Incident Action Plan

DIVISION ASSIGNMENT LIST	1. Branch	2. Division/Group S- Sadler Fire
3. Incident Name: Sadler Complex	4. Operational Period: Date: 08/09/99	Time: 0730 - 2000

5. Operations Personnel

Operations Chief	Skip Hurt/BuzzVan Skike	Division/Group Supervisor	Jerry George
Branch Director		Air Attack Supervisor No.	Pearson/Tubin/Peterson

6. Resources Assigned this Period

Strike Team/Task Force/ Resource Designator	Leader	Number Persons	Trans. Needed	Drop Off PT./Time	Pick Up PT./Time
Ore-Cal #1	Youngblood	20			
Eng. 511		3			

7. Control Operations

Will be announced at briefing.

8. Special Instructions

Remember L.C.E.S.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command		King NIFC		Logistics		King NIFC	
Tactical Div/Group	168.350	King NIFC		Air to Ground	170.225	King NIFC	

Prepared by (Resource Unit Ldr.)	Approved by (Planning Sect. Ch.)	Date	Time
Ross Catron/Madonna Lengerich	Dan Washington/Jeff Luff	08/08/1999	2000

Incident Action Plan

DIVISION ASSIGNMENT LIST	1. Branch	2. Division/Group
		Jiggs Staging
3. Incident Name	4. Operational Period	
Sadler Complex	Date: 08/09/99	Time: 0730 - 2000

5. Operations Personnel

Operations Chief	Skip Hurt/BuzzVan Skike	Division/Group Supervisor	-
Branch Director		Air Attack Supervisor No.	Pearson/Tubin/Peterson

6. Resources Assigned this Period

Strike Team/Task Force/ Resource Designator	Leader	Number Persons	Trans. Needed	Drop Off PT./Time	Pick Up PT./Time
Dozer - Butters					
Dozer - NDF #2					
DOZB	Janice Steldman				

7. Control Operations

Will be announced at briefing.

8. Special Instructions

Remember L.C.E.S.

9. Division/Group Communication Summary

Function	Frequency	System	Channel	Function	Frequency	System	Channel
Command		King NIFC		Logistics		King NIFC	
Tactical Div/Group	168.350	King NIFC		Air to Ground	170.225	King NIFC	

Prepared by (Resource Unit Ldr.)	Approved by (Planning Sect. Ch.)	Date	Time
Ross Catron/Madonna Langerich	Dan Washington/Jeff Luff	08/08/1999	2000

Division Q Unit Log

UNIT LOG	Incident Name: Sadler Complex	2. DATE PREPARED 8/10/99	3. TIME PREPARED
4. UNIT NAME/DESIGNATORS. Division Quebec	5. UNIT LEADER (NAME AND POSITION) Thomas Shepard DIVS	6. OPERATIONAL PERIOD Day 8/9/99	

7. PERSONNEL ROSTER ASSIGNED

NAME	ICS POSITION	HOME BASE
E-3639 Ken Sinchula +4	STL Engines	CDD
E-3638 Art Curly +5	Engines	CDD
X E-3636 Todd McDivitt +4	Engine	CDD
E-23 Rich Simon +4	Engine	PNF Plumas
E-31 Mike Campbell +4	Engine	TNF
✓ E-56 Dave Matticorena +4	Engine	BDF San Bernardino
✓ E-16 Mike Ryan +4	TFL Engine	LPF
Jerry Beddow	DOZB	Apache - ~~Stanislaus~~ NF
Jim Allen	DOZB	Klamath NF
Bens Truck & Equipment Dozers	E33 & E32	Red Bluff, CA
Frank Ruddy	DOZB	Winema
Joe Reyes	DIVS - Assisted w/burnout	Sierra NF
Lalo Gonzales	DOZB	
NDF Task Force 3 - Dan Holbrook	TFL	Carson City
B-1	Type 3 Engine	
B-8	Type 3 Engine	
T-81	Type 3 Engine	

8. ~~ACTIVITY LOG~~ (CONTINUE ON REVERSE)

~~TIME~~ MAJOR EVENTS		
~~High~~Mark Construction Dozer Tom Thompson	D-4 Dozer DOZB	Spring Creek, NV Umatilla NF
B-37	Type 3 Engine	
E-102	Type 1 Engine	
B-6	Type 3 Engine	
T-3	Water Tender	
Dozer-1	Dozer	
T-1	Water Tender	
Smoky Bear Hotshots	Type 1 CHW	Lincoln NF
Dalton Hotshots	Type 1 CHW	
GNP #3	Type 2 CHW	National Park Service
Ron Hawkins	FOBS	
Darrell Abeyta	SOF2	
Dan Hutin	Branch II	Payette NF
Ken Bailey	DIVS Trainee	Bridger Teton NF
Mike Head	DIVS Single Resource	Silver City, NM
E-89 Gary Shupla +2	Type 4 Engine	HOA
	Water Tender	Elko. NV

NFES 1337
E-48

Division Q Unit Log

TIME	MAJOR EVENTS
0630 - 0700	Morning Briefing - Discussed burnout operation with assigned resources. All resources meet at Drop point NW of Indian Well to discuss tactics
0700	Advised Branch II of final needs of two La Garza Dozers staged at old Q-O Division Break.
0930	Reconned Crane Springs area, to the south, a long finger of fire extended towards the east and was burning in a Northerly direction. Active fire also to the north.
0945	Tied in with night Division Titus at Safety Zone near NE corner of fire. He was working on a tactical plan of improving the road to the North, then cutting Dozer line across the head to the west and tying into cold black out in the flats. Plan was sound except for unsecured line to the South. Smoky Bunn & Dalton IHC Supts volunteered to scout back to the south towards Crane springs & beyond to see what could be done. Also sent NDF Task Force #3 with instruction to tie cold black to cold black and burn out, then continue burning out northward. As soon as back door was secured & Dozer line completed at North end we could start burnout from the NW corner and bring it around to the east & the south. Mike Head went also
1200	North end Dozer line completed with E-32 & E-33. Sent one dozer back to improve/construct Safety zones & the other was directed to line the black at least as far as a visible smoke was located to the west.
1345	Crane Springs area secured, strike team of engines in place, and GNP #3 crew in place (NW corner) to start burnout. The head of the fire was probably a half mile away. Wind had been steady 5-7 out of the east all day.
1400	Wind shifted to SW 5-10 mph. Postponed burnout while discussing new strategy with Branch II Dan Hiter, Strike-Engines Ken Smiholz, & GNP Crew boss Tim Hatton. After several wind shifts, conclusion was reached that if we didn't attempt a burnout, the fire would get here anyway. We decided to go ahead with the burn, altering the firing pattern by anchoring in at a safety zone on the very NE corner & burning to the west.
1525	Burn-out commenced at NE corner. Wind switched to east, pushing the burn-out a little. I instructed Joe Reyes to help direct & monitor the firing.
1540	Reyes called me on the radio and requested some Dozer support as fire had spotted across the line at a point half way across the burnout. I sent the Dozer up to him. E-3636 was the engine supporting the burnout.
1600	Branch II requested helicopter for medical transport.
2030	Escorted GNP #3 to ELKO w/ Steve Nemovre
2400	End of shift
214 ICS 5-80	9. PREPARED BY (NAME AND POSITION)

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225